CONTENTS

TRADE NAME	MODEL	SET AND FOLDER NO.
Aircastle	171, 172	96-1
Airline	94GCB-1064A	96-2
Arvin	440T (RE-278)	96-3
General Electric	10C101, 10C102, 10T1, 10T4, 10T5, 10T6, 12C101, 12C102, 12C105, 12T1 Tel. Rec.	96-4
Hallicrafters	511 Tel. Rec.	96-5
Muntz	M-169 Tel. Rec.	96-6
Oldsmobile	982544, 982573	96-7
Philco	50-522, 50-522-I, 50-524, 50-526	96-8
Radio Craftsmen	RC100 Tel. Rec.	96-9
Starrett	John Hancock Tel. Rec.	96-10
Sylvania	1-076, 1-128 (Ch. 1-108) Tel. Rec.	96-11
Zenith	G660, G663, G665 (Ch. 6G01)	96-12

The PHOTOFACT Servicer

May 29, 1950 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. 10, Nos. 95 & 96

CENTRALAB JOINS PHOTOFACT

Starting in PHOTOFACT Set No. 93, the products of the Centralab Division of Globe Union, Inc., Milwaukee, Wis., are listed.

We are very proud to introduce this new member of our Service to PHOTOFACT subscribers.

* * *

SYLVANIA BOOKLET DESCRIBES GERMANIUM DIODE APPLICATIONS

Forty basic germanium diode applications, profusely illustrated with typical circuits and grouped in three sections (radio and television receivers; radio transmitters and amplifiers; and a wide range of instruments and supervisory circuit devices) are available in a new Sylvania booklet.

The first section on crystal radio receivers and video circuit components contains 10 schematic diagrams with circuit constants. The second section on transmitters, includes six schematics. The section treating instrument and gadget uses describes twenty-four devices ranging from a simple sideband generator in which matched diodes are arranged as a ring modulator to a 144 mc tubeless radio receiver for the remote control of model airplanes and model boats.

The booklet includes adequate descriptions and circuit diagrams for many easy-to-build devices including crystal voltage multipliers, two way relays operating at different dc voltages and suitable for temperature, frequency and current variation measurement, or for relay operation of alarm or recording mechanism; frequency triplers; tubeless tone generators; and selective telephone and telegraph circuits.

The "40 Uses for Germanium Diodes" booklet, also contains ratings and characteristics of available Sylvania germanium crystal diodes. It may be obtained from Authorized Sylvania Radio Tube Distributors or with remittance of one dollar to the Advertising Department, Sylvania Electric Products Inc., Emporium, Pa.

* * *

FOREIGN RECEIVER SCHEMATICS

Editors and Engineers, Ltd., Santa Barbara, California, can furnish schematics for most foreign-made receivers at $2.00 each (including air mail from Europe to you). No list available, but $1.65 refunded if they cannot furnish promptly.

* * *

WE'LL PAY $5.00 FOR YOUR IDEAS ON NEW WAYS TO USE PHOTOFACT FOLDERS

Have you found some novel way of putting your PHOTOFACT Folders to work so you get extra value and help from them? Tell us about it, and if the idea is good enough to pass on to thousands of your fellow PHOTOFACT subscribers, we'll print it in the "Servicer" and send youra crisp $5.00 check. Here's one practical suggestion we've received that was well worth $5.00

> "Just received Sets No. 91, 91A and 92. My main Index to PHOTOFACTS takes in only Sets up to 90, so I clip the Indexes from the front of the Set envelope and stick them on the back of the 1 through 90 Index. This way I don't have to go looking through the Folders themselves to get needed information.
>
> "When the new Index comes through I discard the old one!"
>
> Al Lustig
> Navarre Radio and
> Television Laboratory
> 4220 Avenue S Brooklyn, New York

Address your letters to Ann Jones, c/o PHOTOFACT Servicer.

FIELD EXPERIENCES -

For every service "Field Experience" published, we issue a certificate good for one PHOTOFACT Folder Set. Awards are issued at the time of publication. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or for the results obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

* * *

PHILCO Model 50-922
Photofact Set No. 88, Folder No. 8

Complaint: The set does not play up to the standard for this type of radio. The volume control has to be advanced more than usual to hear strong radio stations. The weak ones are missing entirely.

All the components checked okay and the alignment was perfect. Signal tracing proved useless as at no point in the set could any abnormal variations in signal strength be noticed.

Cause and Remedy: The trouble was discovered to be reversed loop leads. We have recently serviced two of these sets with the same complaint. In one case, the leads leading from the loop terminal block to the set were reversed. In the other case the leads from the loop terminal block to the loop were reversed. Best method of checking is to compare wiring with a set of the same make which is operating properly.

W. M. Olson,
Nixon Electric
246 N. Main Street
Colville, Wash.

* * *

BENDIX Model 656A
Photofact Set No. 2, Folder No. 31

Complaint: I had repaired this set, and it developed the following trouble during the guarantee period. Usually, when the set is turned on it has a loud hum until fully warmed up. Then it works O. K.

Remedy: Tubes all checked O. K. (I watched carefully for shorts while tubes were warming up in the checker.) Everything else checked O. K. After considerable thought I decided that the heater of either the 35Y4 or the 35A5 must be shorting to the cathode during the warmup period. By alternately replacing the 35Y4 and the 35A5 and letting the set warm up and cool off, I discovered that the 35A5 was the culprit. Install a new 35A5 tube.

ZENITH Model G615
Photofact Set No. 86, Folder No. 14

Complaint: IF oscillating.

Remedy: I placed a 270 K Ohm resistor across the secondary of the first IF transformer and ballast resistors across the heaters of the 12BA6 IF tube and the 12AT6 to correct high voltage across same. Set was aligned by method described in PHOTOFACT Folder, but there was still too much regeneration and some motorboating. By using a frequency modulated signal generator and an oscilloscope I was able to align the set so there was no evidence of regeneration.

SILVERTONE Model 8020
Photofact Set No. 43, Folder No. 17

Complaint: Inoperative on FM.

Cause: I discovered that the FM oscillator was not oscillating and that tapping the plunger type trimmer on the variable condenser of the FM oscillator would cause it to start and stop oscillating.

Remedy: I replaced this trimmer with one of the type used in the FM converter and RF circuits and realigned the set.

Editor's Note: All three above Field Experiences were contributed by:

Joe B. Higginbotham, Jr.
R. F. D. #1, Box 67
Dewey Rose, Georgia (at Nuberg, Ga.)

* * *

EMERSON Model 587 A, Chassis 120033A
Photofact Set No. 71, Folder No. 10

Trouble: Lug on output transformer, Item TA, has mounting lugs bent over under the chassis. One lug is near pin 4 of 50L6, Item V4. Putting chassis in cabinet allows the tube socket lug to short to the transformer mounting lug.

Remedy: Bend lug the other way and solder.

Edward W. Finn
53-103 63rd Street
Maspeth, N. Y.

AIRCASTLE
MODELS 171, 172

AIRCASTLE
MODELS 171, 172

AIRCASTLE MODEL 171

TRADE NAME	Aircastle, Models 171, 172
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-120 Volts AC-DC
RATING	.25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer 1 3/4 inches to the right of the center of the volume control shaft.

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to stator on rear section of tuning gang. Low side to B-.	455KC (Unmod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A5	"

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIRCASTLE PART No.	STANDARD REPLACEMENT		
V1	Converter	12SA7	12SA7	8R	
V2	IF Amp.	12SK7	12SK7	8N	
V3	DET.-AVC AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	50	1500	N-7550	PRSA150/50-30			TA-530	Filter-Red
B	30	150						Filter-Yellow
C2	.05	200	N-1345	P288-05			TM-15	AVC Filter
C3	.2	400	N-5160	P488-22			72P53	Line Isolation
C4	250		N-6488	GP250M	D6-251	GP2K-250	1FM-325	Diode RF Filter
C5	.006	600	N-4894	P688-006	D6-562	811-005	TM-26	Audio Coupling
C6	470	500	N-4890	1468-0005	D6-471	GP2K-470	1FM-35	AF Amp. Plate Bypass
C7	.015	400	N-1344	P488-015			TM-11	Audio Coupling
C8	.015	400	N-1344	P488-015			TM-11	Output Plate Bypass
C9	.05	400	N-1346	P488-05			TM-15	Rect. Plate Bypass
C10	100			CN100KN750	DN-100	N750L-100	MS-31	Fixed Trimmer

CONTROLS

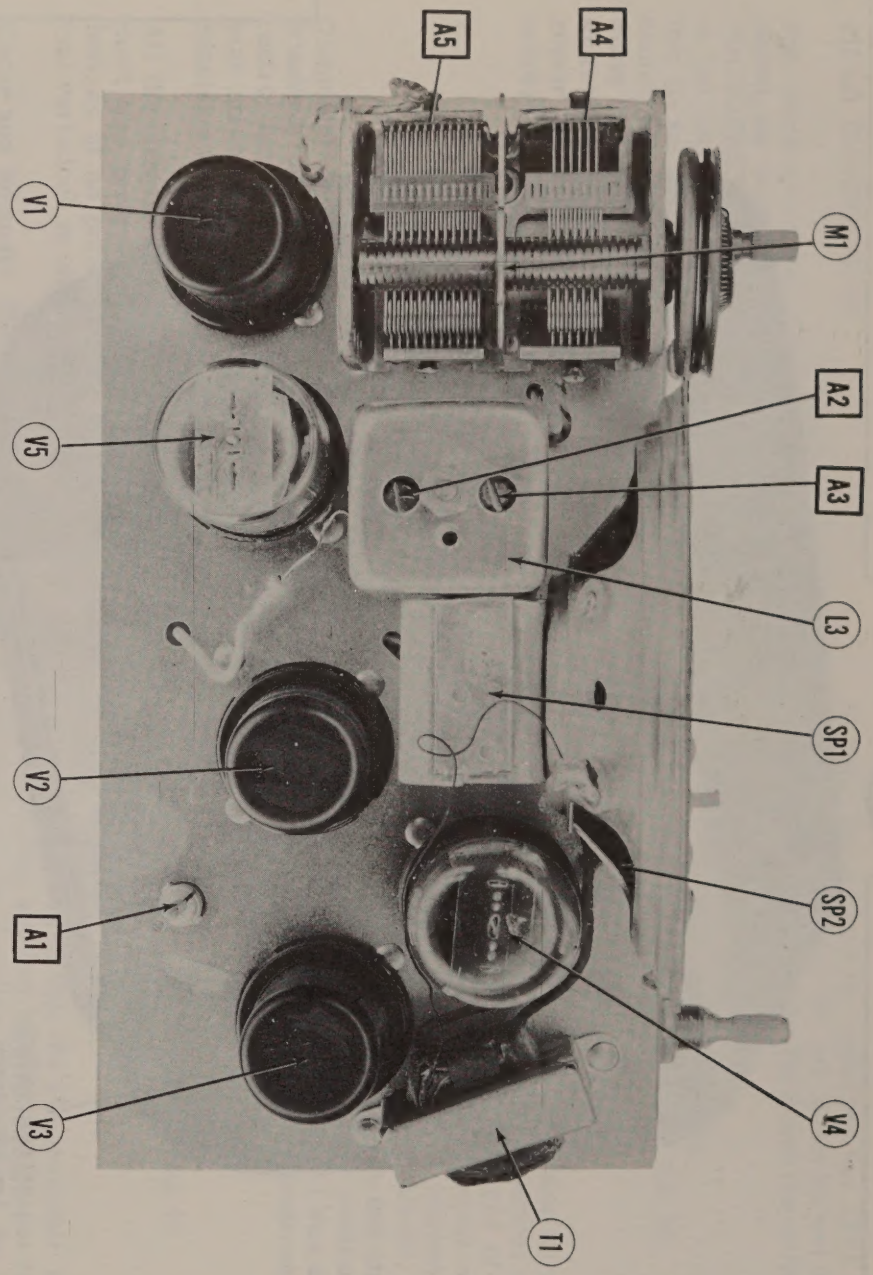
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	N-6693	QI3-133	AM-60-Z	BSK-60-S	Volume control-See note
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R1A per instructions

Note. Install a 50KΩ resistor in series with the right hand terminal of the new control and the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down.)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	
R2	22KΩ	½	N-4025	BTS-22K	Osc. Grid
R3	1 Meg.	½	N 1262	BTS-1 Meg.	AVC Network
R4	6.8 Meg.	½	N 4028	BTS-6.8 Meg.	AF Amp. Grid
R5	220KΩ	½	N-4026	BTS-220K	AF Amp. Plate
R6	470KΩ	½	N-4027	BTS-470K	Output Grid
R7	220Ω	1	N-4024	BW-½-220	Output Cathode
R8	1200Ω	1	N-4900	BW-1-1200	Filter
R9	220KΩ	½	N-4026	BTS-1200	Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3.3KΩ	3.2Ω	280Ω	.75Ω	N-7548	A-3332 ①	A-3025		① Drill one new mounting hole.

SPEAKER

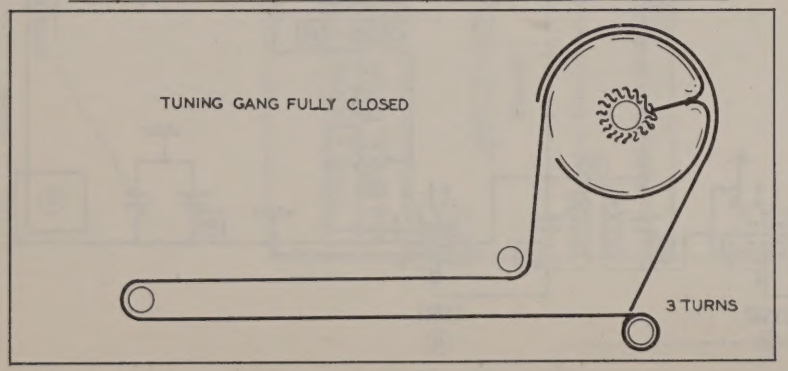
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	VIKING PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.2Ω	N-4318	4J4	4A07	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16 "				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	
L1	Loop Ant.	3.5Ω		N-7540		
L2	Osc. Coil	1Ω	8Ω	N-7139	14-1073	
L3	1st IF	21Ω	21Ω	N-7541	16-6658	
L4	2nd IF	22.5Ω	22.5Ω	N-7542		

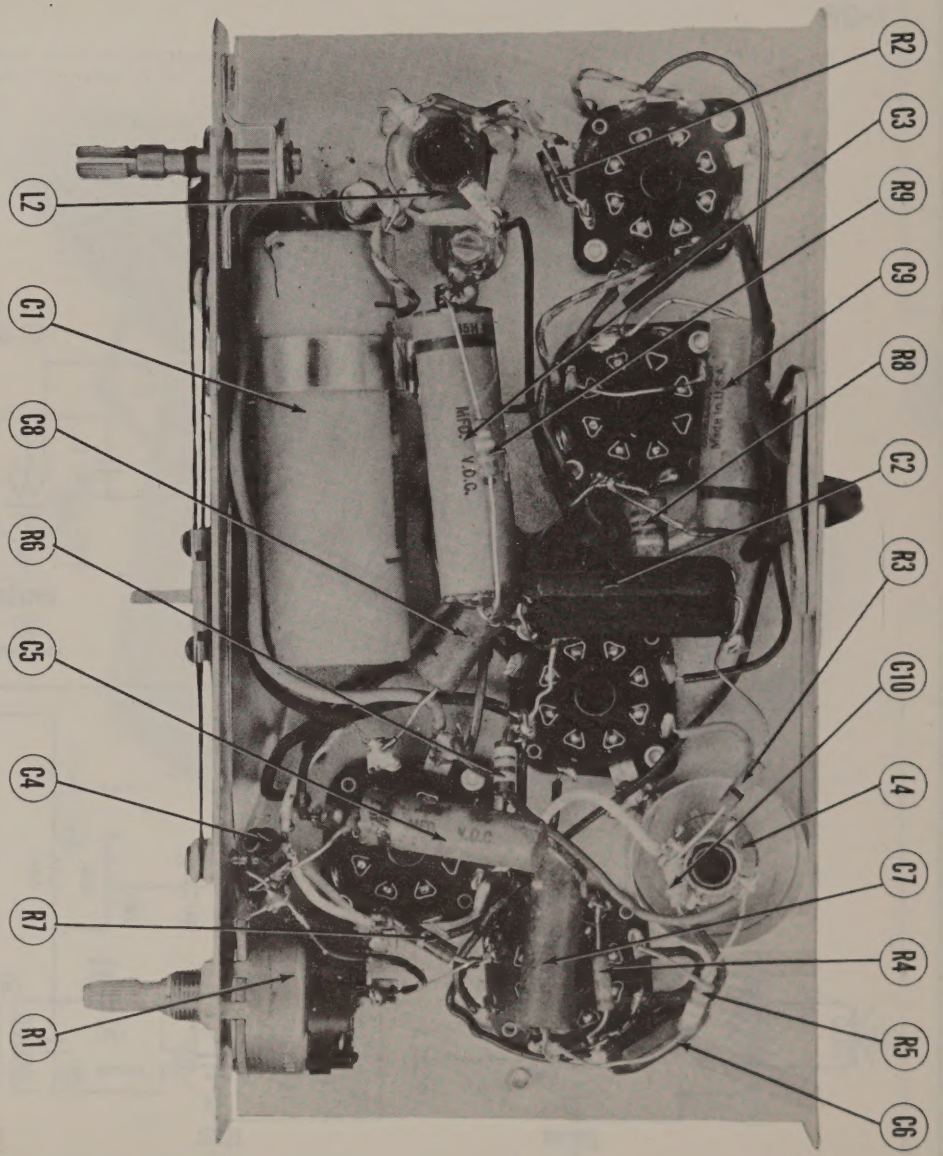
MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M1	2 Gang Var. Cap.	N-7543	(35-442MMF, 21-177MMF)
	Dial Scale	N-7544	
	Knob	N-7617	Ivory
	Knob	N-7620	Walnut

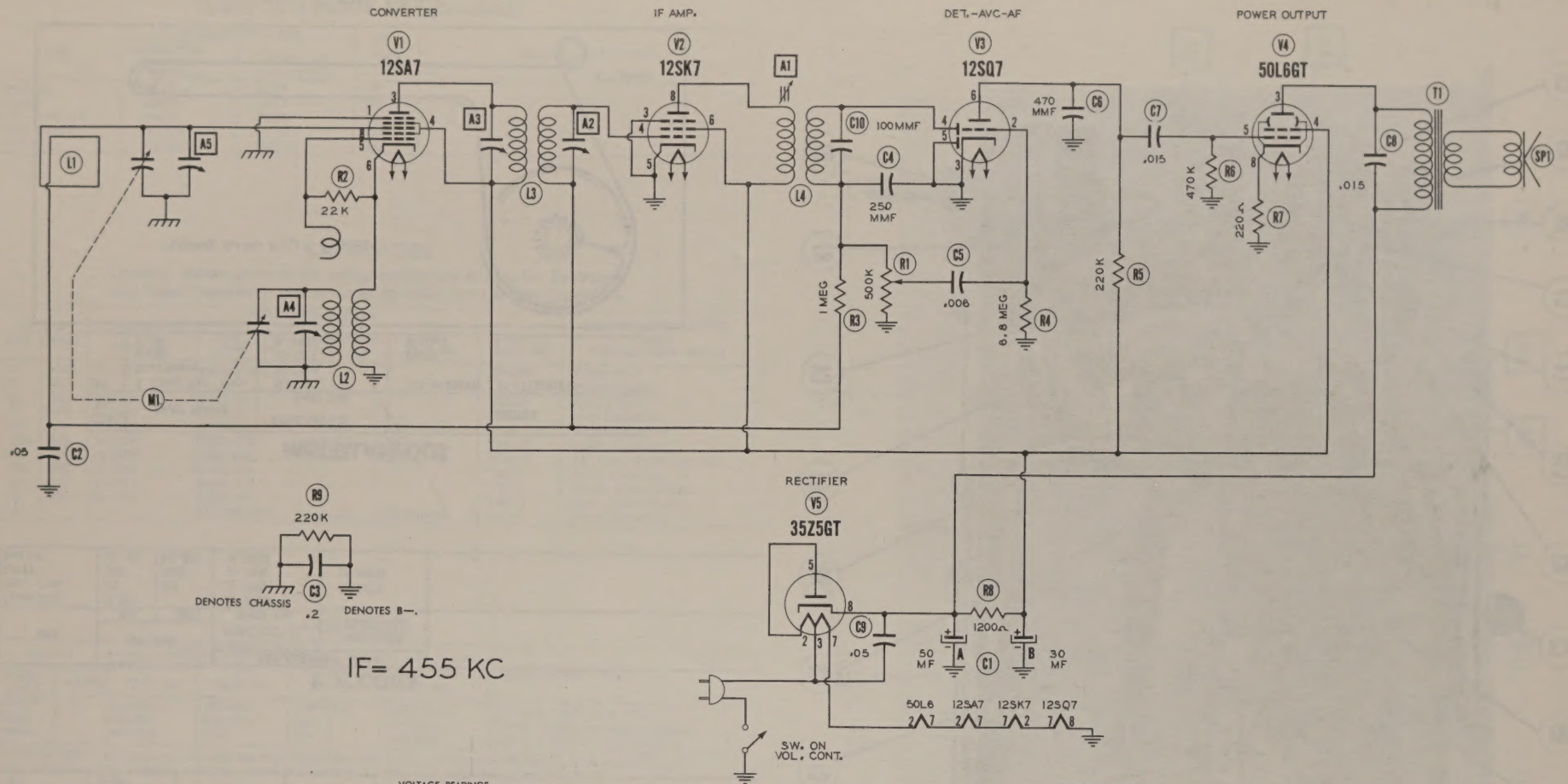


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



AIRCASTLE MODEL 171



IF= 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V.	38.5VAC	87VDC	87VDC	§-9VDC	0V.	26VAC	-.4VDC
V 2	12SK7	0V.	13VAC	0V.	-.4VDC	0V.	87VDC	26VAC	87VDC
V 3	12SQ7	0V.	-.8VDC	0V.	-.4VDC	0V.	60VDC	13VAC	0V.
V 4	50L6GT	0V.	87VAC	112VDC	87VDC	0V.	-.4VDC	38.5VAC	7.1VDC
V 5	35Z5GT	0V.	112VAC	117VAC	0V.	112VAC	0V.	87VAC	120VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	▲0Ω	40Ω	†1.2KΩ	†1.2KΩ	22KΩ	1Ω	27Ω	1.5 Meg.
V 2	12SK7	▲0Ω	12Ω	0Ω	1.5 Meg.	0Ω	†1.2KΩ	27Ω	†1.2KΩ
V 3	12SQ7	▲0Ω	6.8 Meg.	0Ω	500KΩ	0Ω	†220KΩ	12Ω	0Ω
V 4	50L6GT	Inf.	90Ω	†300Ω	†1.2KΩ	470KΩ	500KΩ	40Ω	220Ω
V 5	35Z5GT	Inf.	120Ω	115Ω	Inf.	120Ω	Inf.	90Ω	90KΩ

† MEASURED FROM PIN 8 OF V5.
▲ MEASURED FROM CHASSIS GROUND.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

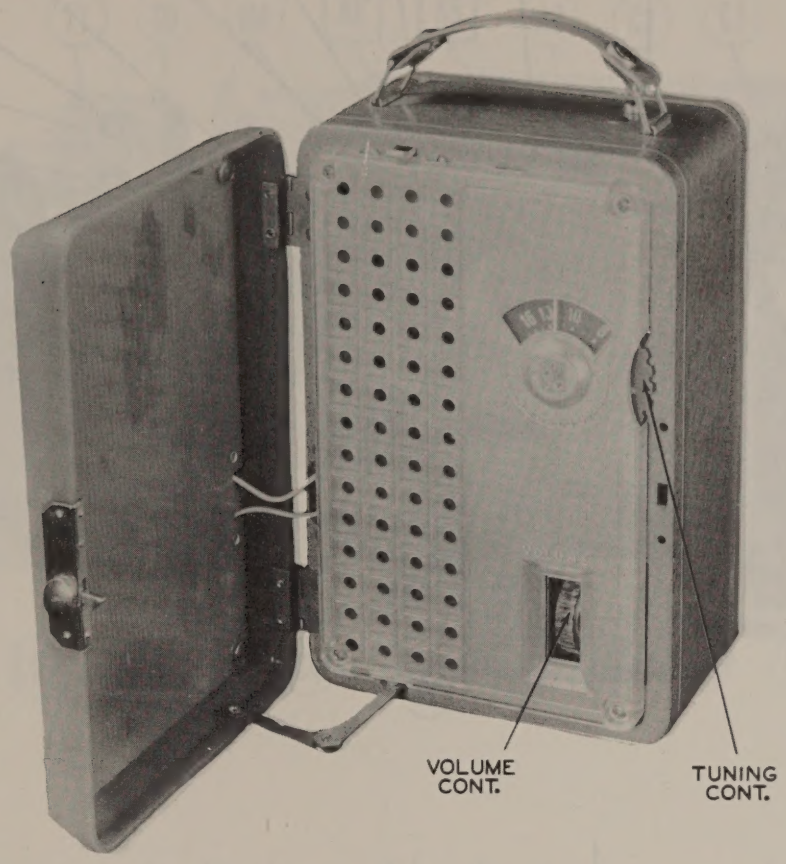
A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1950

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRLINE MODEL 94GCB-1064A (BATTERY OPERATED)

AIRLINE MODEL 94GCB-1064A (BATTERY OPERATED)



AIRLINE MODEL 94GCB-1064A (BATTERY OPERATED)

AIRLINE MODEL 94GCB-1064A

TRADE NAME	Airline, Model 94GCB-1064A
SUPPLIER	Montgomery Ward and Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Battery Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1T4 IF Amp., 1S5 DET-AVC-AF, 3S4 Power Output
POWER SUPPLY	1.5 Volts "A" Supply and 67.5 Volts "B" Supply
RATING	250MA @ 1.5 Volts DC and 8MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial turn tuning gang fully closed and set the last reference mark on the dial even with the reference mark on the cabinet.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on front section of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receivert. Adjust for maximum output.
3.		Loop	1500KC	Tune for max. output.	"	A6	"

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 94GCB-1064A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1T4	1T4	6AR	
V3	DET.-AVC-AF	1S5	1S5	6AU	
V4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	8	100	5.417	SRE150/10				RF Bypass
C2	47		4.109-12	GP47M	D6-470	GP1K-47	1FM-45	Osc. Grid Cap.
C3	.02	200	3.101-11	P285-02			68P15	Decoupling
C4	.02	200	3.101-11	P285-02			68P15	AVC Filter
C5	47		4.109-12	GP47M	D6-470	GP1K-47	1FM-45	Diode RF Filter
C6	.002	200	3.101-3	P285-002	D6-202	GP2M-002	68P27	Audio Coupling
C7	.02	200	3.101-11	P285-02			68P15	AF Amp. Screen Bypass
C8	47		4.109-12	GP47M	D6-470	GP1K-47	1FM-35	AF Amp. Plate Bypass
C9	.002	200	3.101-3	P285-002	D6-202	GP2M-002	68P27	Audio Coupling
C10	.005	200	3.101-5	P285-005	D6-502	811-005	68P11	Output Plate Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	2 Meg.	½	8.225-1				Volume control

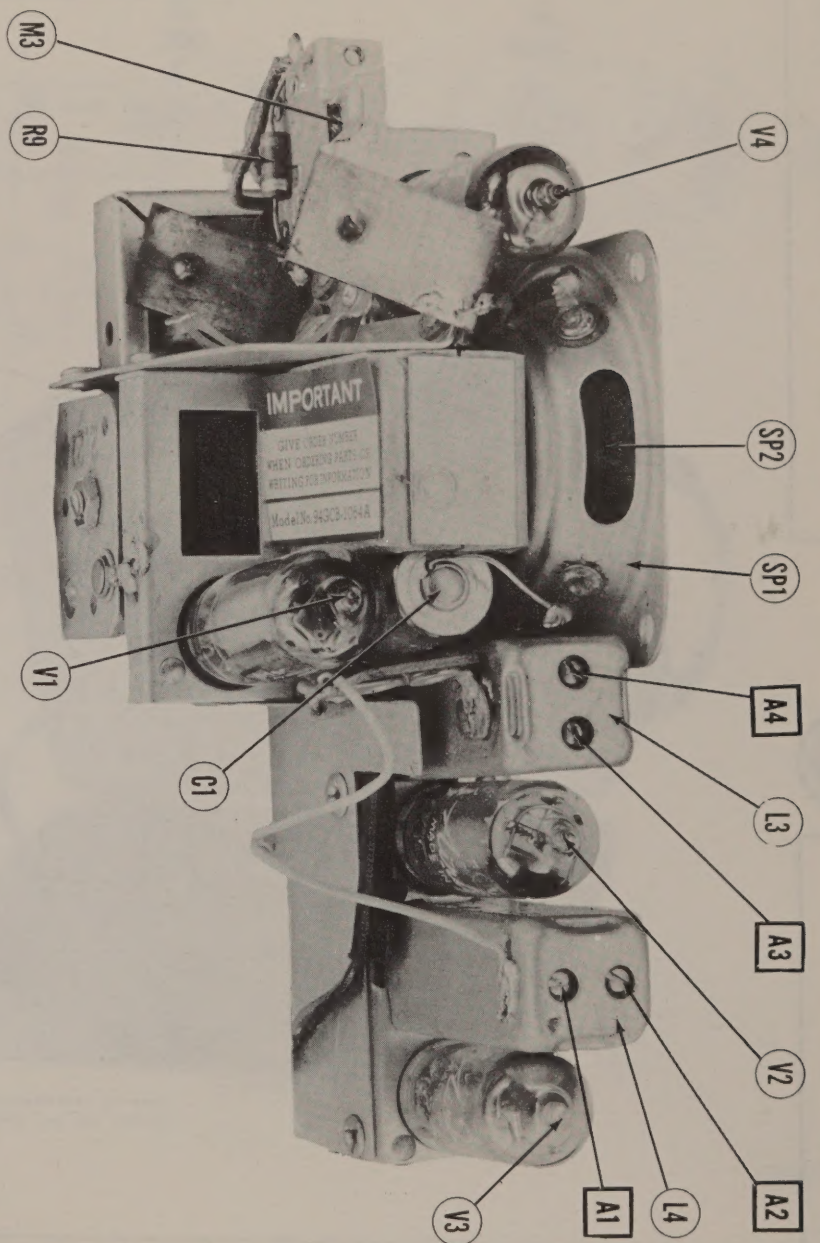
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½	7.105-45	BTS-100K	Osc. Grid
R3	4700Ω	½	7.105-164	BTS-4700	Decoupling
R4	3.3 Meg.	½	7.105-101	BTS-3.3 Meg.	AVC Network
R5	10 Meg.	½	7.105-171	BTS-10 Meg.	AF Amp. Grid
R6	4.7 Meg.	½	7.105-13	BTS-4.7 Meg.	AF Amp. Screen
R7	1 Meg.	½	7.105	BTS-1 Meg.	AF Amp. Plate
R8	3.3 Meg.	½	7.105-101	BTS-3.3 Meg.	Output Grid
R9	820Ω	½	7.105-185	BTS-820	Bias Network

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	6.5KΩ	2.6Ω	450Ω	.7Ω	9.207-A	A-3329 *	A-2927	RO-11	* Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	2.6Ω	30-315			
	CONE DIA.	V. C. DIA.				
SP2	2 3/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
L1	Loop Ant.	6.5Ω		35.321		
L2	Osc. Coil	1.8Ω	7Ω	1.466	14-1074	
L3	1st IF	25Ω	25Ω	1.412-2	16-6668	
L4	2nd IF	23.5Ω	23.5Ω	1.413-2	16-6669	

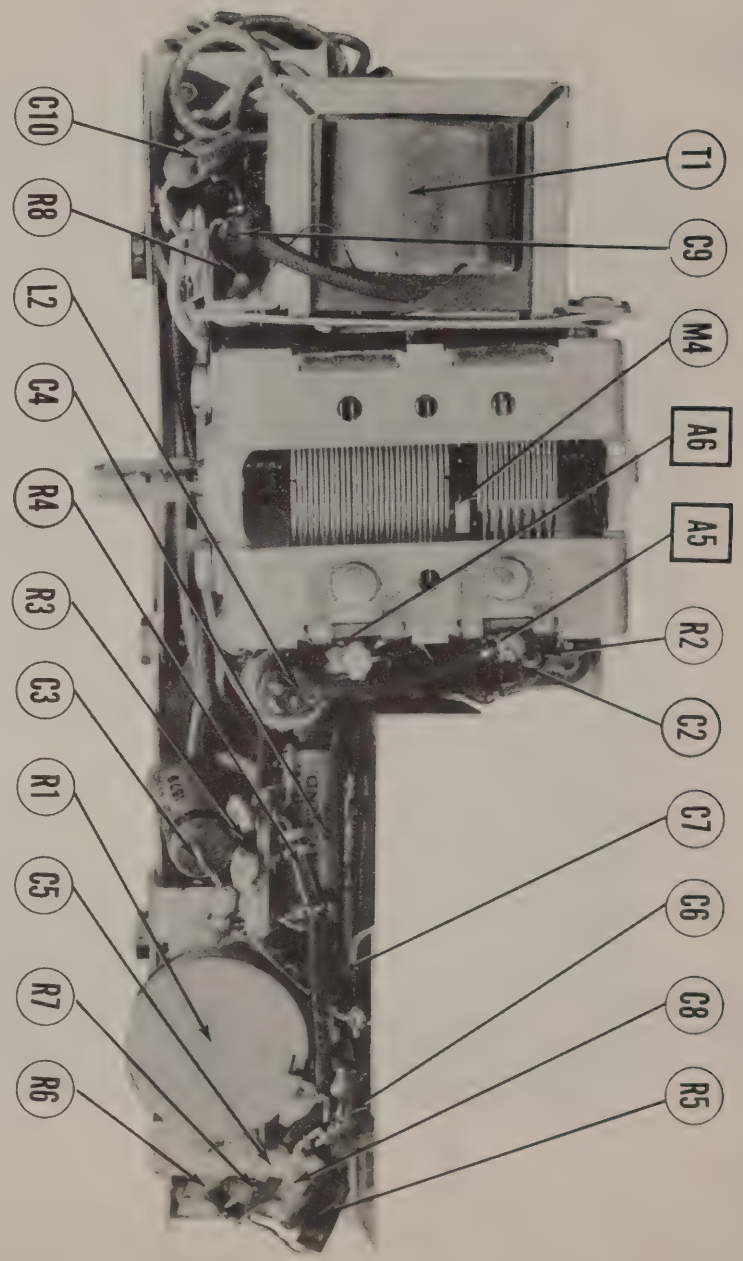
BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	1.5V "A"	62-23	950			2R			
M2	67.5V "B"	62-43 or 62-10		467			XX45		

MISCELLANEOUS

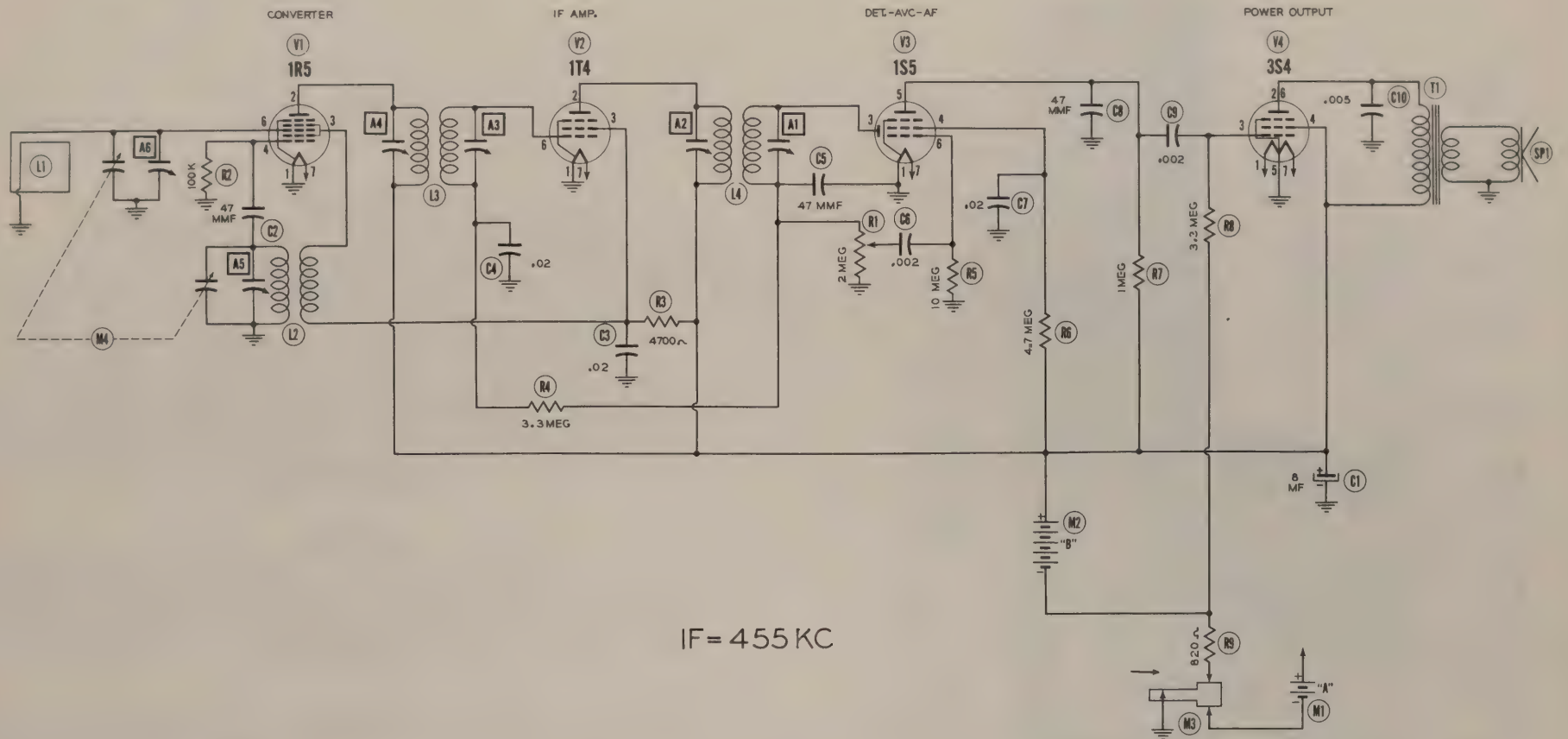
ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Switch	35.243	On-Off (Includes R9)
M4	2 Gang Var. Cap.	2.214	(21-400MMF, 22-162MMF)
	Knob	13.193	Tuning
	Knob	13.124	Volume
	Cabinet	35.317	

CHASSIS—BOTTOM VIEW



AIRLINE MODEL 94GCB-1064A

AIRLINE MODEL 94GCB-1064A



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0V.	60VDC	50VDC	§-6.4VDC	0V.	0V.	1.5VDC
V 2	1T4	0V.	60VDC	50VDC	80VDC	0V.	-.1VDC	1.5VDC
V 3	1S4	0V.	60VDC	-.2VDC	10.5VDC	12VDC	-.1VDC	1.5VDC
V 4	3S4	1.5VDC	58VDC	-.9VDC	60VDC	0V.	58VDC	1.5VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†25Ω	†4.7KΩ	100KΩ	*	6.5Ω	*
V 2	1T4	*	†23.5Ω	†4.7KΩ	†0Ω	*	5.3Meg.	*
V 3	1S5	*	†0Ω	2 Meg.	†4.7 Meg.	†1 Meg.	10 Meg.	*
V 4	3S4	*	†450Ω	3.3 Meg.	†0Ω	*	†450Ω	*

* DO NOT USE OHMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM PIN 4 OF V4.

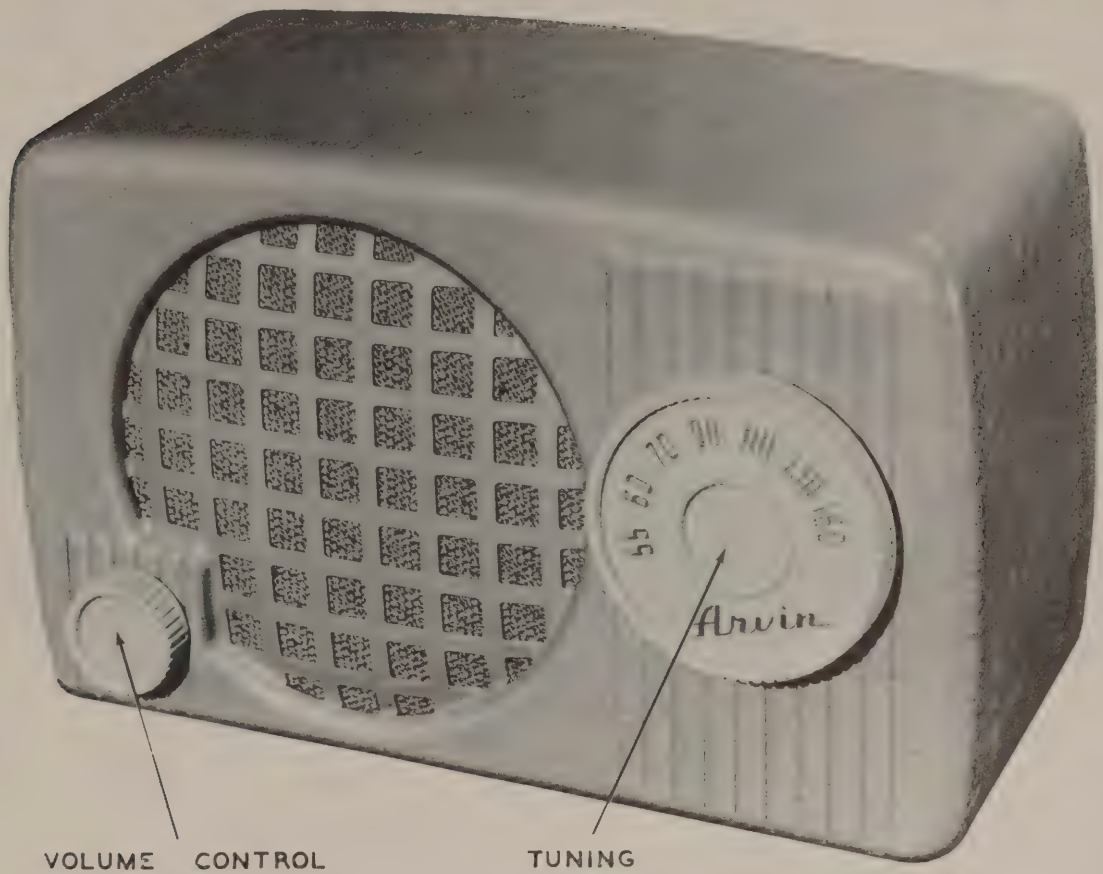
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1950

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

ARVIN
MODEL 440T (Ch. RE-278)



ARVIN
MODEL 440T (Ch. RE-278)

ARVIN MODEL 440T

TRADE NAME	Arvin, Model 440T (Ch. RE-278)
MANUFACTURER	Noblitt-Sparks Industries Inc., Columbus, Indiana
TYPE SET	AC-DC Operated Superheterodyne Receiver
TUBES (FOUR)	Types 12SA7GT Converter, 12SQ7GT DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC — RATING .26 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to stator on rear section of tuning gang. Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2,	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	50MMF	High side to antenna terminal on antenna coil. (Remove hank antenna). Low side to B-.	1620KC	"	"	A3	Adjust for maximum output.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use. without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ARVIN PART No.	STANDARD REPLACEMENT		
V1	Converter	12SA7GT	12SA7GT	8AD	
V2	DET.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
V3	Power Output	50L6GT	50L6GT	7AC	
V4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150	A22876	PRSA86D4A			TA-305	Filter-Red
B	20	150						Filter-Blue
C	20	25						Output Cath. Bypass-Green
C2	74	500		1468-000075	D6-750	GP1K-75	1FM-475	RF Coupling
C3	.05	200	C20067-503	P288-05			TM-15	AVC Filter
C4	.05	400	C20068-503	P488-05			72P51	Line Isolation
C5	100	500	C20065-101	1468-0001	D6-101	GP1K-100	1FM-31	Diode RF Filter
C6	.002	600	C20069-202	P688-002	D6-202	GP2L-002	TM-22	Audio Coupling
C7	100	500	C20065-101	1468-0001	D6-101	GP1K-100	1FM-31	AF Amp. Plate Bypass
C8	.002	600	C20069-202	P688-002	D6-202	GP2M-002	TM-22	Audio Coupling
C9	.01	400	C20068-103	P488-01	D6-103	821-01	TM-11	Output Plate Bypass
C10	.05	400	C20068-503	P488-05			TM-15	Line Filter

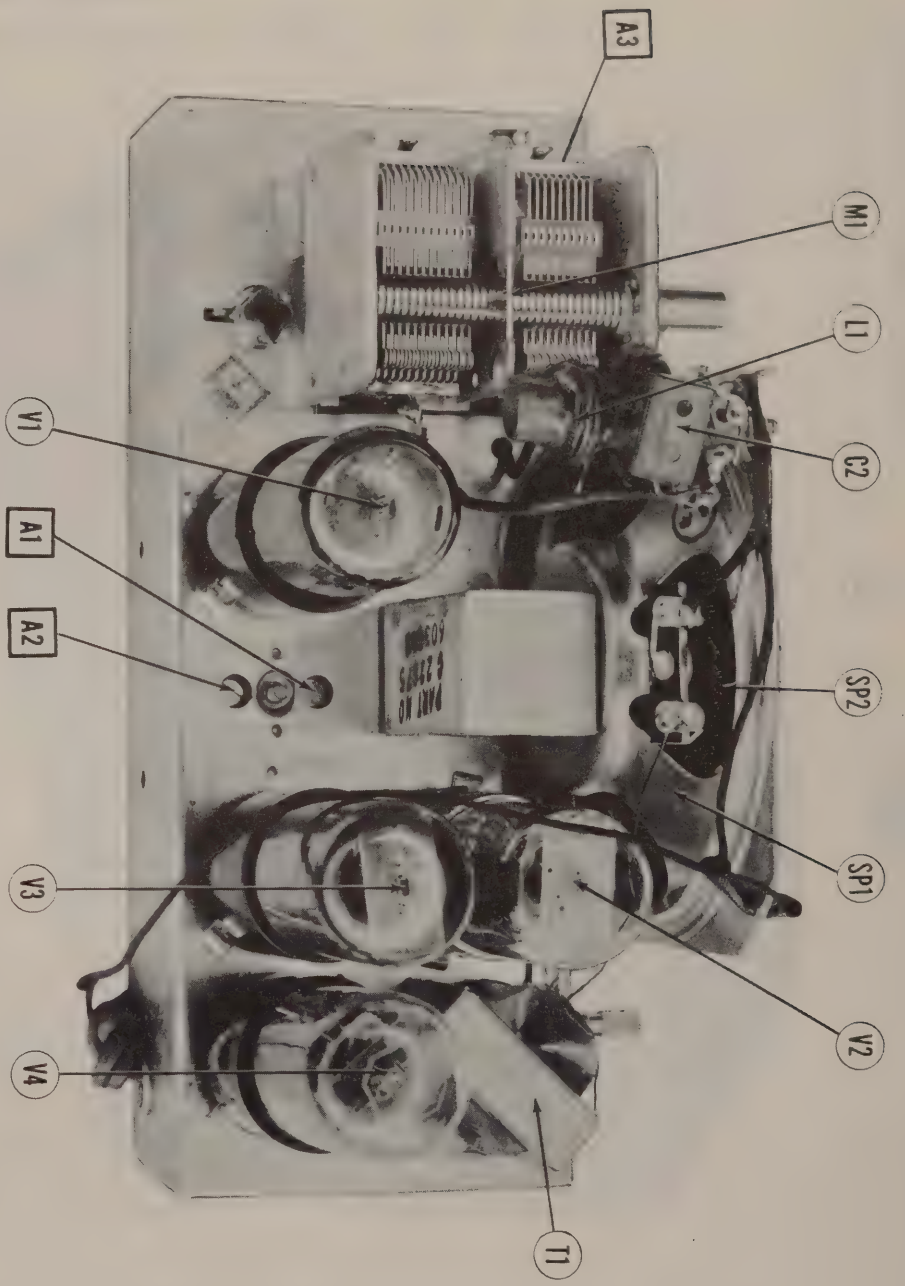
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	2 Meg.	½	C21630	Q13-139	AM-66-Z	AN-76	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	K-155	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.	
R2	22KΩ	½	C20060-223	BTS-22K	Osc. Grid
R3	4.7 Meg.	½	C20060-475	BTS-4.7 Meg.	AVC Network
R4	15 Meg.	½	C20060-156	BTS-15 Meg.	AF Amp. Grid
R5	470KΩ	½	C20060-474	BTS-470K	AF Amp. Plate
R6	1 Meg.	½	C20060-105	BTS-1 Meg.	Output Grid
R7	120Ω	½	C20120-121	BW-½-120	Output Cathode
R8	2200Ω	1	C20070-222	BW-1-2200	Filter
R9	330KΩ	½	C20060-334	BTS-330K	Isolation
R10	15Ω	½	C20060-150		Surge Limiter
R11	47Ω	1	A19177	BW-1-47	Filament Dropping-Wire Wound

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	1.9KΩ	3.5Ω	160Ω	.4Ω	C22878	A-3332 ①	A-2928 ①	RO-2 ①	① Bend mounting tabs down and mount in original slots.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARVIN PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-113		
SP1	PM	3.5Ω	C-22875	MOD. P4-X	4A07	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

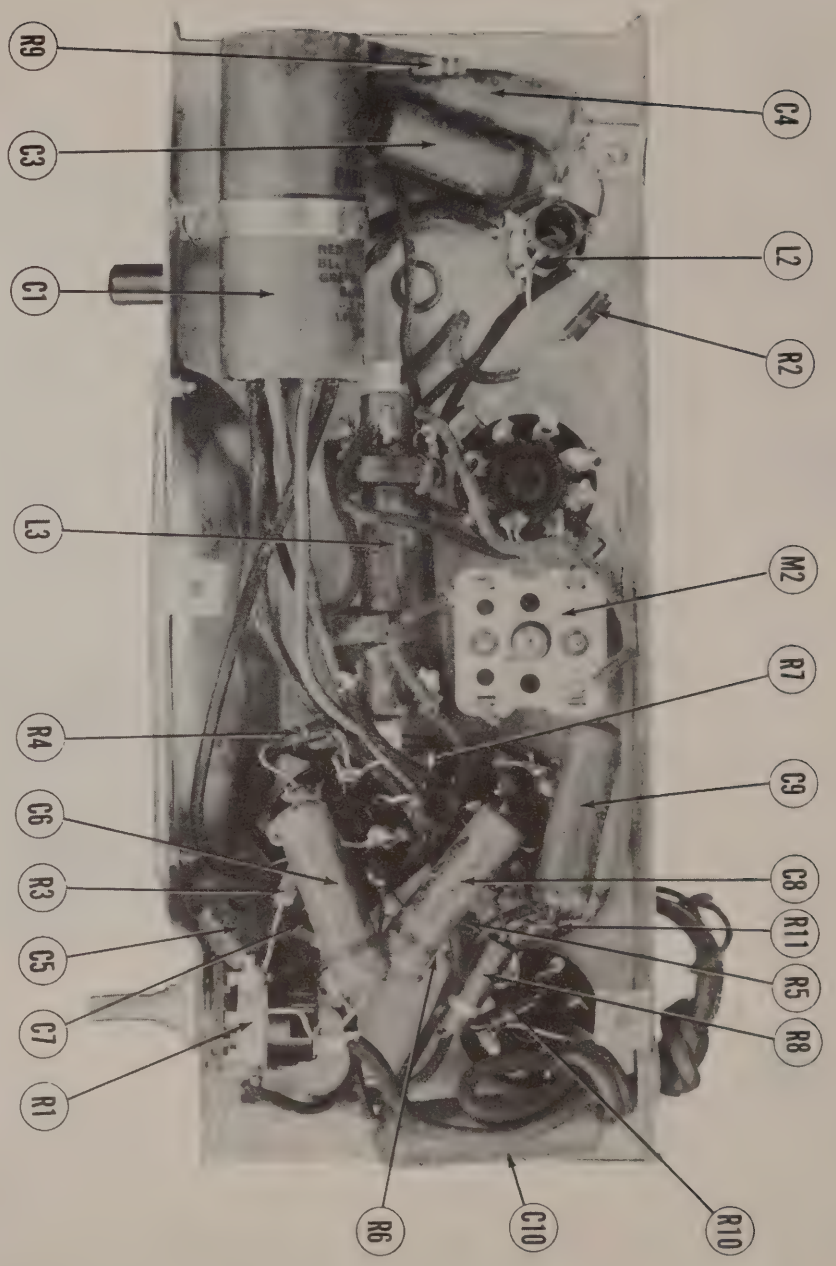
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.	
L1	Ant. Coil	34Ω	3Ω	C22864	14-1071	
L2	Osc. Coil	.9Ω	7Ω	C22865	14-1073	
L3	IF Trans.	27Ω	16Ω	C22863	16-6661	

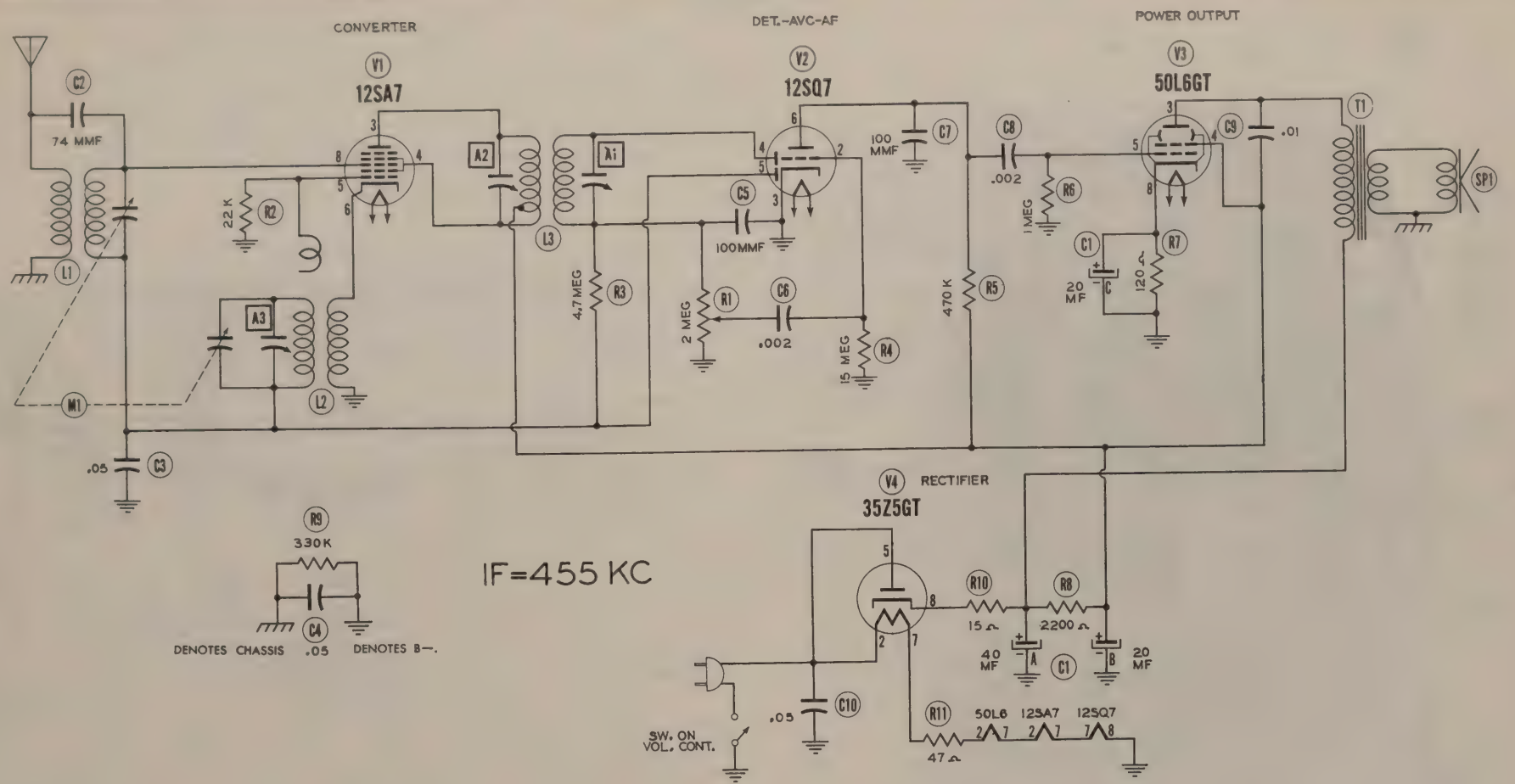
MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	2 Gang Var. Cap.	C22919	(11-377MMF, 36-214MMF)
M2	Dual Trimmer	A21042	IF Adj. (A1, A2)
	Knob	C22923-1	Tuning
	Knob	A22924-1	Volume
	Cabinet	AA23438-1	Ivory
	Cabinet	AA23438-2	Red
	Cabinet	AA23438-3	Yellow
	Cabinet	AA23438-4	Bronze
	Cabinet	AA23438-5	Willow Green
	Cabinet	AA23438-6	Burgundy

CHASSIS—BOTTOM VIEW



ARVIN MODEL 440T



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V.	25VAC	95VDC	95VDC	§-8.3VDC	0V.	12.5VAC	-.8VDC
V 2	12SQ7GT	0V.	-.6VDC	0V.	-.6VDC	-3VDC	48VDC	12.5VAC	0V.
V 3	50L6GT	0V.	75VAC	120VDC	95VDC	0V.	0V.	25VAC	5.8VDC
V 4	35Z5GT	0V.	117VAC	110VAC	0V.	117VAC	125VDC	80VAC	125VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	Inf.	25Ω	†2.2KΩ	†2.2KΩ	Inf.	.9Ω	12.5Ω	6.7 Meg.
V 2	12SQ7GT	Inf.	15 Meg.	0Ω	2 Meg.	6.7 Meg.	†472KΩ	12.5Ω	0Ω
V 3	50L6GT	Inf.	75Ω	†175Ω	†2.2KΩ	1 Meg.	Inf.	25Ω	120Ω
V 4	35Z5GT	Inf.	117Ω	110Ω	Inf.	117Ω	130KΩ	80Ω	130KΩ

† MEASURED FROM PIN 8 OF V4.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1950

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

GENERAL ELECTRIC MODELS
10C101, 10C102, 10T1, 10T4, 10T5, 10T6, 12C101, 12C102, 12C105, 12T1

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 10T6

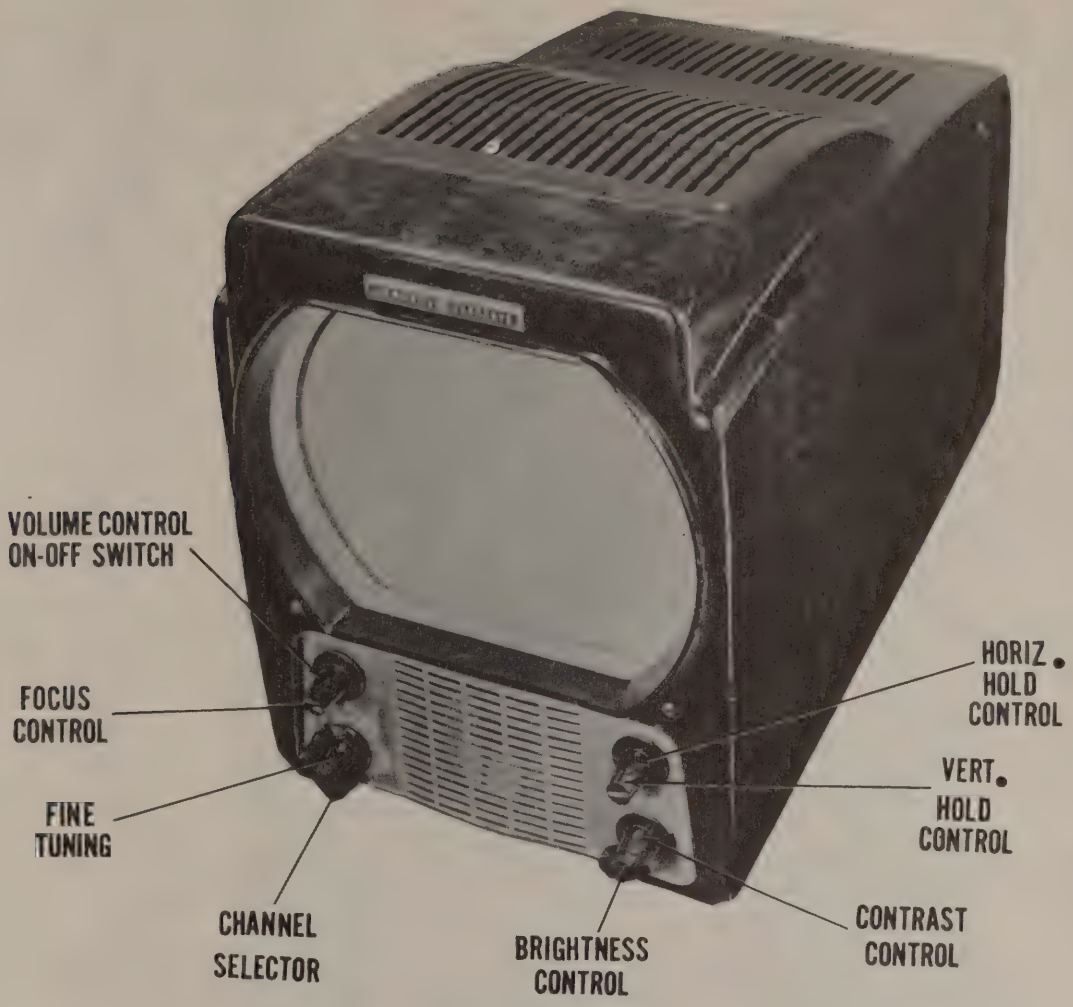
GENERAL ELECTRIC MODELS
10C101, 10C102, 10T1, 10T4, 10T5, 10T6,
12C101, 12C102, 12C105, 12T1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

Date 5/50 Set No. 96—Folder No. 4

GENERAL ELECTRIC MODELS 10C101, 10C102, 10T1, 10T4, 10T5, 10T6, 12C101, 12C102, 12C105, 12T1



GENERAL ELECTRIC MODEL 10T6

TRADE NAME	General Electric Models 10C101, 10C102, 10T1, 10T4, 10T5, 10T6, 12C101, 12C102, 12C105, 12T1
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, New York
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	1.4 Amp. at 117 Volts AC
TUNING RANGE	Channels 2 thru 13

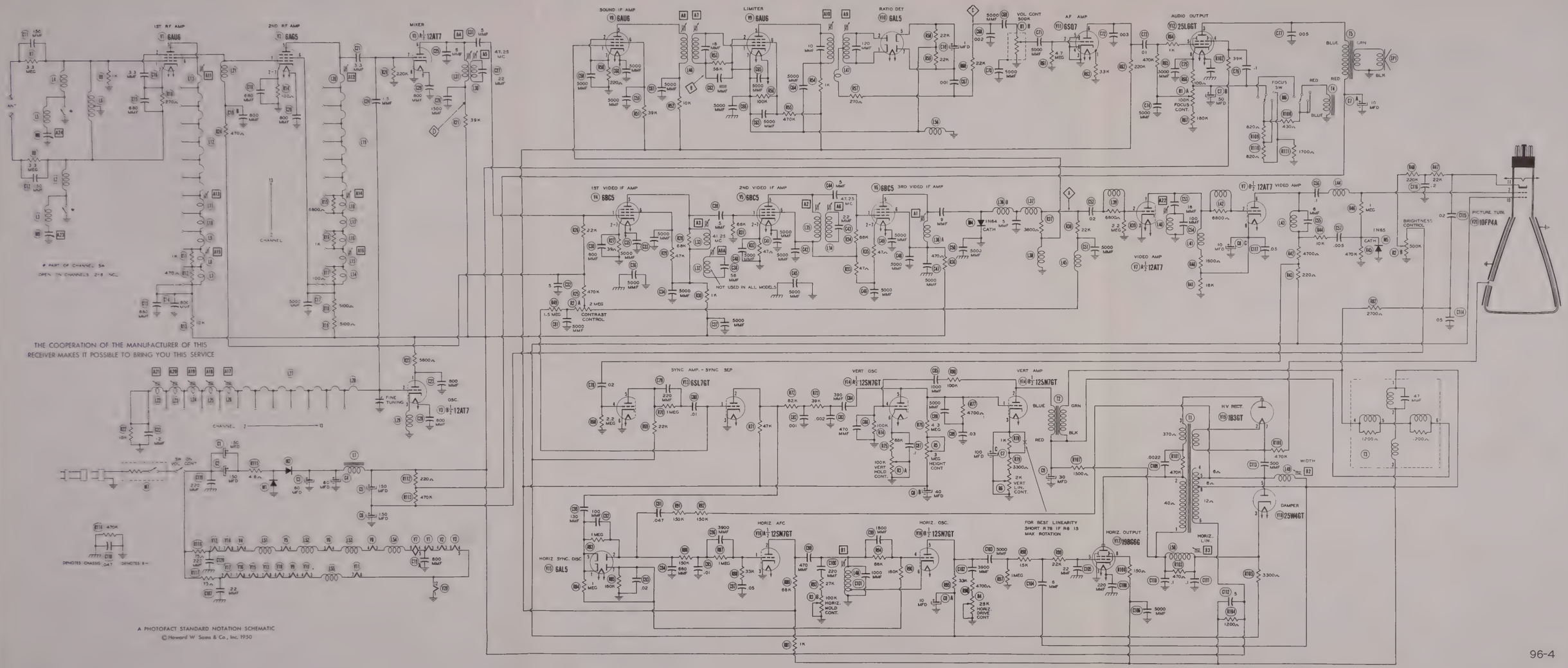
INDEX

Alignment Instructions 6, 7
Block Diagram 20
Disassembly Instructions 20
Fine Tuning Drive Cord Stringing 20
Horiz. Sweep Circuit Adjustment 19
Parts List and Description 13, 14, 15, 16
Photographs
Cabinet-Rear View 19
Capacitor Identification 11, 18
Photographs (continued)
Chassis-Top View 3, 16
RF Tuner 10
Resistor Identification 12, 17
Trans., Inductor and Alignment Identification 4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8
Wave Trap Adjustments 19

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

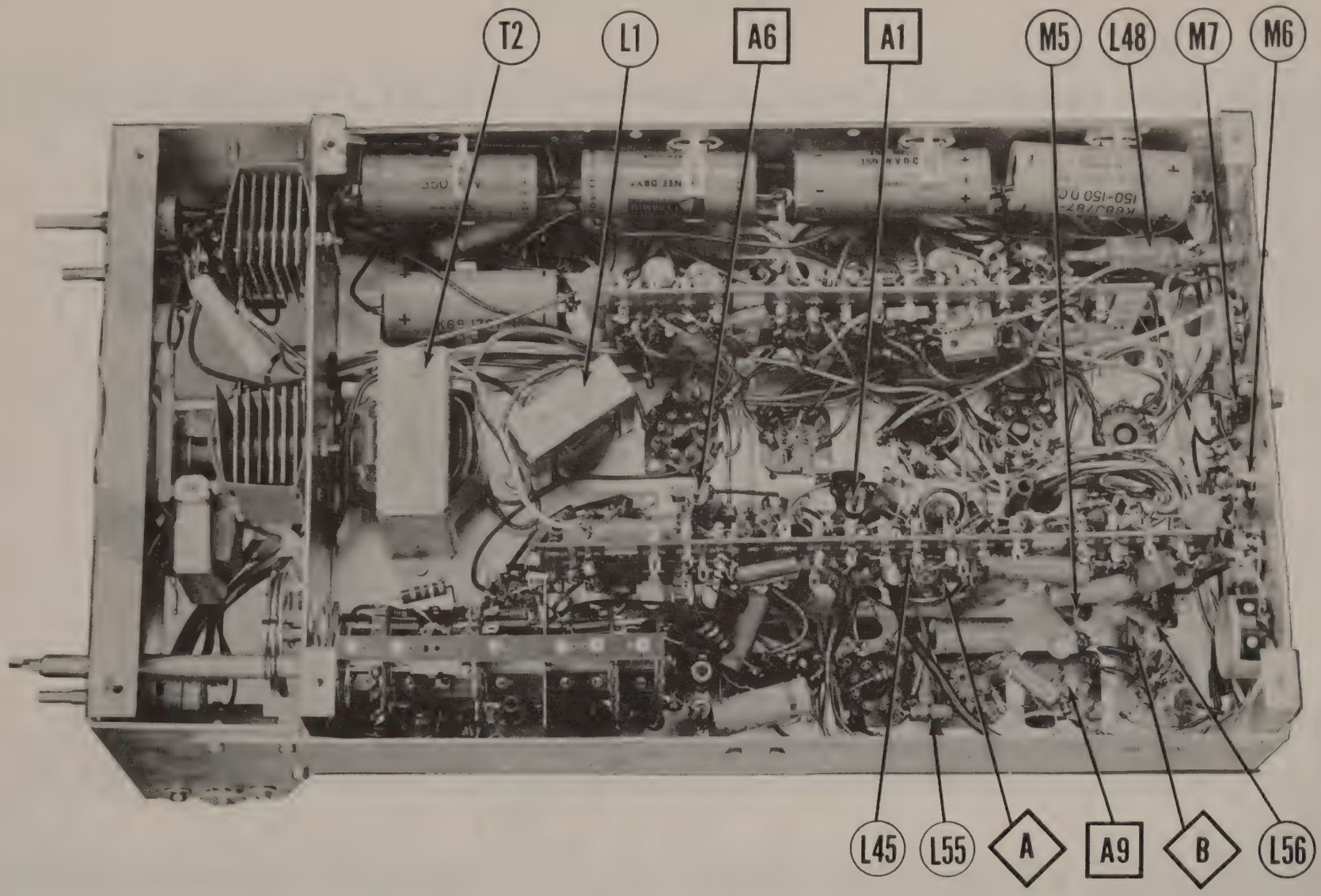
GENERAL ELECTRIC MODELS 10C101, 10C102, 10T1, 10T4, 10T5, 10T6, 12C101, 12C102, 12C105, 12T1



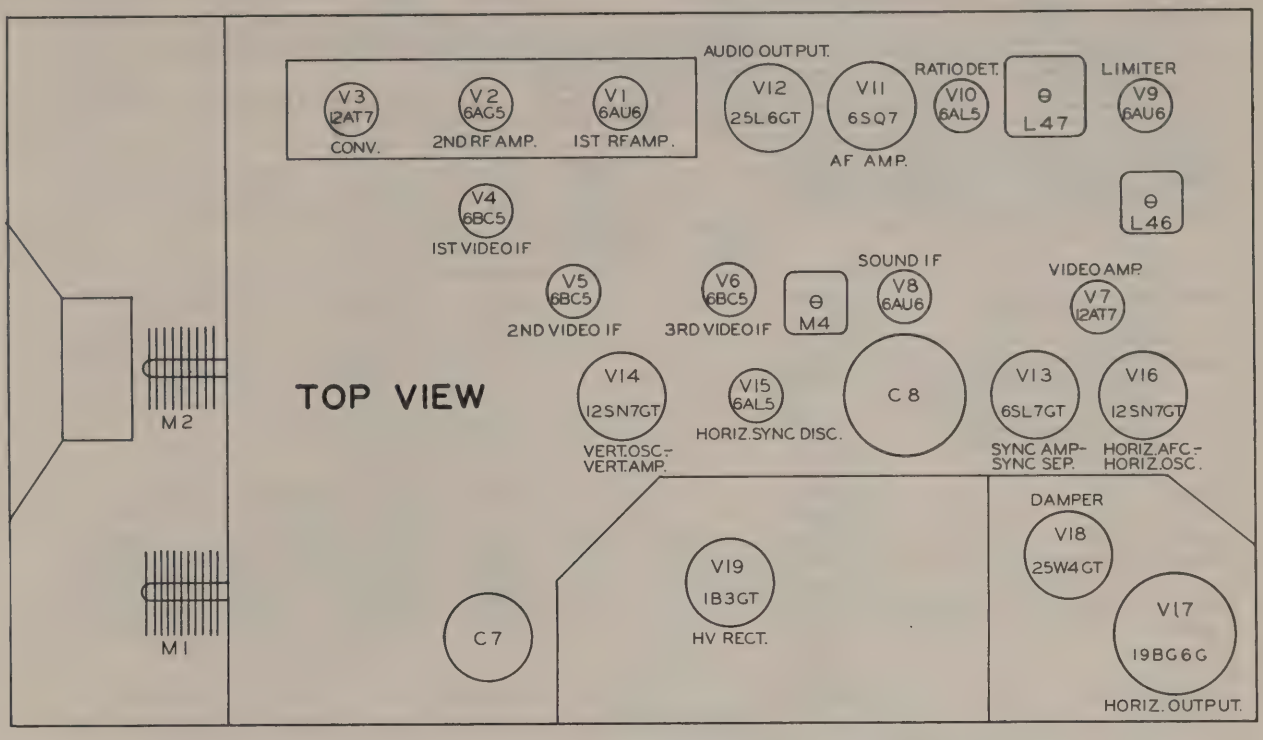
GENERAL ELECTRIC MODELS 10CI01, 10CI02, 10TI, 10TI4, 10TI5, 10TI6, 12CI01, 12CI02, 12CI05, 12TI

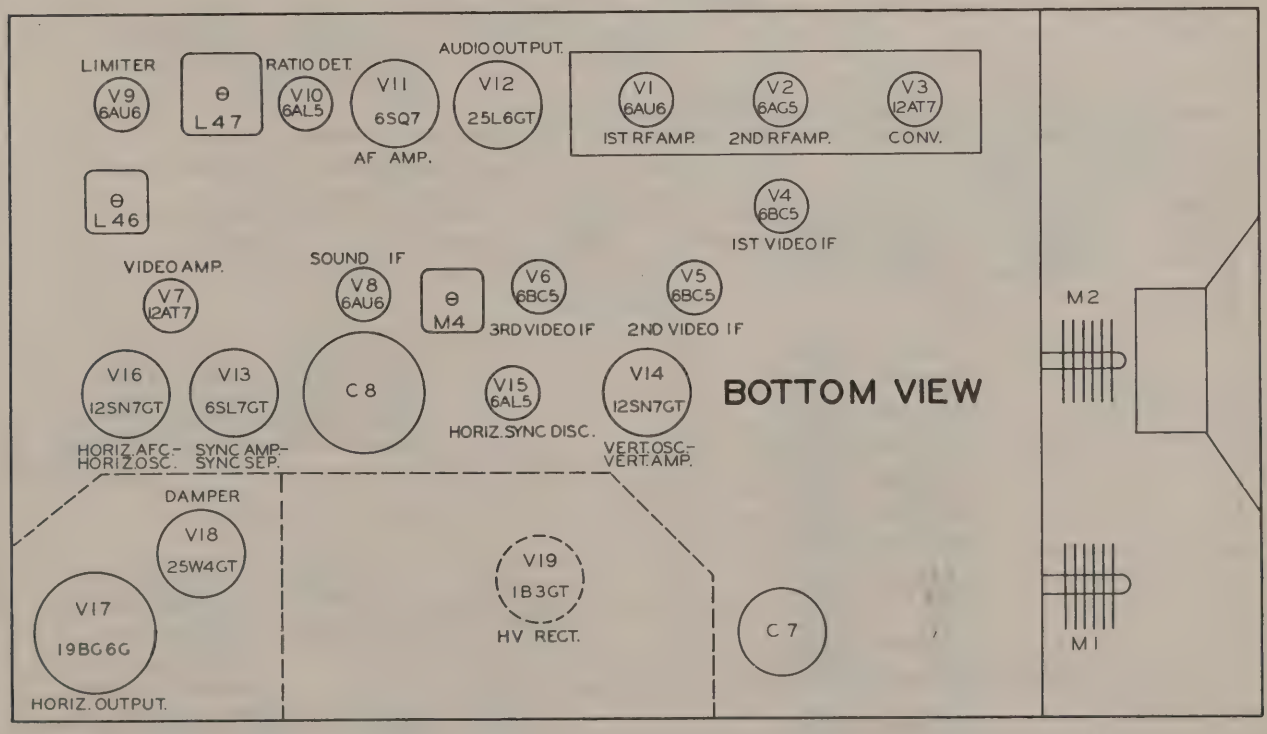
96-4

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
If the set is to be aligned with the picture tube removed, short pins 1 and 14 of the picture socket to complete the filament circuit.
The end of the high voltage lead should be securely taped to eliminate the possibility of a high voltage shock.
DO NOT remove the horizontal oscillator to kill the high voltage.
A convenient point of connection for the B- referred to is the shield between the wafer sections on the bottom of the tuner.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect the negative lead of a 4 volt battery to the junction of R49 and C81. Connect the positive lead to B-.
Adjust the contrast control to read -4 volts on a VTVM connected between pin 1 of V4 and B-.
Turn the channel switch to a channel which causes no interference with the response curve. To check for spurious signals turn the fine tuning control, if there is any change in the response curve, switch to another channel and repeat the check. Try channel 12 or 13.
Detune A6 and A7 by turning the slugs fully out (counter-clockwise).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (Grid) of 6BC5 (V6). Low side to B-.	45MC (15MC SWP)	44.5MC	See instructions above	Vert. Amp. thru 10KΩ to point (A). Low side to B-.	A1	Short A2. Adjust for response curve similar to figure 1.
2.	.01MFD	High side to pin 1 (Grid) of 6BC5 (V5). Low side to B-.	"	44.75MC	"	"	A2	Remove short from A2 and short A3. Adjust for response curve similar to Fig 2.
3.	.01MFD	High side to pin 1 (Grid) of 6BC5 (V4). Low side to B-.	"	42.50MC 45.75MC	"	"	A3	Remove short from A3 and short A4. Adjust for response curve similar to figure 3.
4.	.01MFD	High side to the junction of L18 and L19 on second RF switch wafer.	"	44.2MC	"	"	A4, A1	Remove short from A4. Adjust A4 and A5 for response curve similar to Fig 4.
5.	.01MFD	"	"	47.25MC (maximum output)	"	"	A5, A6	Adjust for MINIMUM marker indication at the 47.25MC point on response curve as shown in figure 5.
5A.	.01MFD	"	"	41.25MC (maximum output)	"	"	A6A	Adjust for minimum indication at 41.25MC point on curve. (This trap appears in late production model 10T6).
6.	.01MFD	"	"	41.25MC 42.5MC 45.0MC 45.75MC 47.25MC	"	"		Check for response curve similar to figure 5. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT

During sound IF alignment keep the sweep generator output low enough to prevent limiting in the receiver. To check for limiting action increase the generator output, the response curve should increase in amplitude.
Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V8). Low side to B-.	4.5MC (450KC SWP)	4.5MC	Any channel not used locally.	Vert. Amp. thru 10KΩ to point (B). Low side to B-.	A7, A8	Adjust for maximum amplitude and symmetry as per figure 6.
8.	.01MFD	"	"	"	"	Vert. Amp. thru 10KΩ to point (C). Low side to B-.	A9, A10	Adjust A9 so 4.5MC occurs at center of crossover lines as per figure 7. Adjust A10 for maximum amplitude and straightness of crossover lines.

RF ALIGNMENT

Match the generator output to the receiver with the matching network shown in figure 8 or figure 9.
Connect the bias battery the same as under video IF alignment and adjust the contrast control to read -4 volts on the grid of V4.
Shunt L31 with a 680 ohm resistor.
Connect approximately 400MFD of electrolytic capacitors (350 volts) between the tuner B+ terminal and tuner chassis (B-). This will reduce any hum to prevent erroneous indications.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	See instructions above	To antenna terminals.	213MC (15MC SWP)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point (D). Low side to B-.	A11, A12	Adjust for response curve similar to Fig 10.
10.	"	"	207MC (15MC SWP)	205.25MC 209.75MC	12	"		Check for response curve similar to fig. 10 If the markers do not fall within the limits shown, make slight adjustment of A11 and A12 with channel switch set for that channel. Recheck all high band channels to see that they have not been seriously effected.
			201MC (15MC SWP)	199.25MC 203.75MC	11			
			195MC (15MC SWP)	193.25MC 197.75MC	10			
			189MC (15MC SWP)	187.25MC 191.75MC	9			
			183MC (15MC SWP)	181.25MC 185.75MC	8			
			177MC (15MC SWP)	175.25MC 179.75MC	7			
11.	"	"	85MC (15MC SWP)	83.25MC 87.75MC	6	"	A13, A14	Adjust A13 to place video marker and A14 to place sound marker as shown in fig. 11.
12.	"	"	79MC (15MC SWP)	77.25MC 81.75MC	5	"		Check for response curve similar to fig 11. If necessary retouch A13 and A14 for optimum response.
			69MC (15MC SWP)	67.25MC 71.75MC	4			
13.	"	"	63MC (15MC SWP)	61.25MC 65.75MC	3	"	A15, A16	Adjust A15 to place video marker and A16 to place sound marker as shown in fig. 11.
14.	"	"	57MC (15 MC SWP)	55.25MC 59.75MC	2	"		Check for response similar to fig 11. If necessary make compromise adjustment of A15 and A16 for optimum response.

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range. Remove 680Ω shunt from L31.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	See instruct-above RF alignment	To antenna terminals.	213MC (15MC SWP)	211.25MC	13	Vert. Amp. thru 10KΩ to point (A). Low side to B-.	L28	Set fine tuning control to the center of its range. Expand or compress coil turns until marker appears at 50% on the high frequency slope of the response curve as per figure 10.
16.	"	"	207MC (15MC SWP)	205.25MC	12	"		Check to see if the video marker can be moved up and down the entire high frequency slope of the response curve with the fine tuning control. If not make compromise adjustment of L28 turns.
			201MC (15MC SWP)	199.25MC	11			
			195MC (15MC SWP)	193.25MC	10			
			189MC (15MC SWP)	187.25MC	9			
			183MC (15MC SWP)	181.25MC	8			
			177MC (15MC SWP)	175.25MC	7			
17.	"	"	85MC (15MC SWP)	83.25MC	6	"	A17	Set the fine tuning control to the center of its range. Adjust to place the video marker at 50% on the high frequency slope of the response curve.
			79MC (15MC SWP)	77.25MC	5		A18	
			69MC (15MC SWP)	67.25MC	4		A19	
			63MC (15MC SWP)	61.25MC	3		A20	
			57MC (15MC SWP)	55.25MC	2		A21	

4.5MC TRAP ADJUSTMENT

The adjustment of this trap should not be attempted unless it is definitely known to be out of alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	.01MFD	High side to pin 2 (Grid) of 12AT7 (V7). Low side to B-.	Not used	4.5MC (400 ∿ Mod.)	Any	Vert. Amp. thru Det. probe (Fig. 12) to pin 2 of picture tube. Low side to B-.	A22	Adjust for MINIMUM 400 ∿ indication on scope.

FIG.1

FIG.2

FIG.3

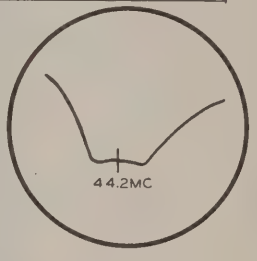


FIG.4

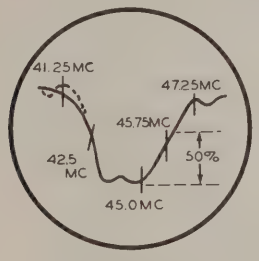


FIG.5

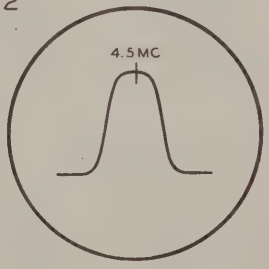


FIG.6

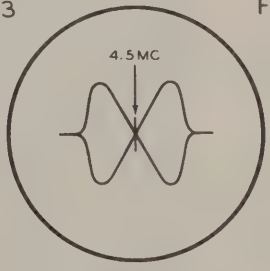


FIG. 7

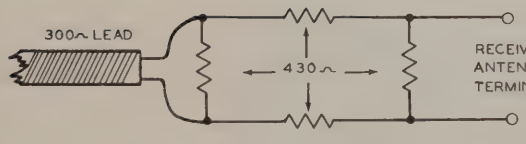
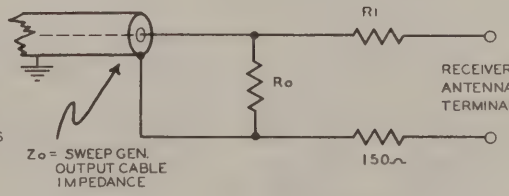


FIG.8



Zo	Ro	R1
50Ω	56Ω	120Ω
72Ω	82Ω	110Ω
92Ω	110Ω	100Ω

FIG. 9

FIG.10

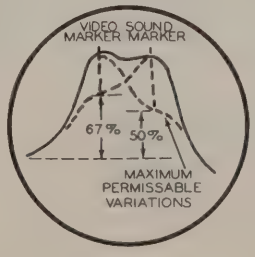


FIG.11

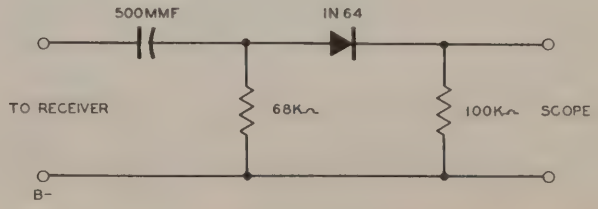


FIG.12

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AU6	0V.	-.8VDC	20VAC	26VAC	165VDC	165VDC	2.5VDC		
V 2	6AG5	-1.2VDC	.8VDC	12.5VAC	19VAC	165VDC	165VDC	.9VDC		
V 3	12AT7	215VDC	§-4VDC	0V.	6.5VAC	6.5VAC	135VDC	-4VDC	0V.	12.5VAC
V 4	6BC5	-1.4VDC	.3VDC	60VAC	53VAC	260VDC	165VDC	.3VDC		
V 5	6BC5	-.4VDC	.7VDC	51VAC	45VAC	125VDC	125VDC	.7VDC		
V 6	6BC5	#-.1VDC	#.6VDC	45VAC	39VAC	#125VDC	#125VDC	#.6VDC		
V 7	12AT7	65VDC	-.8VDC	0V.	26VAC	26VAC	310VDC	65VDC	70VDC	32.5VAC
V 8	6AU6	0V.	1.9VDC	32.5VAC	40VAC	195VDC	155VDC	1.9VDC		
V 9	6AU6	-.7VDC	0V.	27VAC	20VAC	250VDC	29VDC	0V.		
V 10	6AL5	.1VDC	.1VDC	13.5VAC	20VAC	.6VDC	0V.	-.6VDC		
V 11	6SQ7	0V.	-.6VDC	0V.	0V.	0V.	100VDC	12.5VAC	6.5VAC	
V 12	25L6GT	0V.	100VAC	250VDC	190VDC	12VDC	38VDC	75VAC	42VDC	
V 13	6SL7GT	-1.6VDC	245VDC	0V.	-.5VDC	245VDC	0V.	60VAC	50.5VAC	
V 14	12SN7GT	19VDC 10VDC	385VDC	27VDC 31VDC	-1.1VDC	19VDC 10VDC	2.6VDC	75VAC	60VAC	
V 15	6AL5	-.2VDC	-2VDC	60VAC	65VAC	-.2VDC	0V.	-17VDC		
V 16	12SN7GT	-.8VDC	200VDC	0V.	-32VDC	225VDC 185VDC	.2VDC	80VAC	65VAC	
V 17	19BG6G	-29VDC	95VAC	0V.	0V.	-29VDC	270VDC	80VAC	270VDC	TOP CAP *
V 18	25W4GT	0V	0V	400VDC	250VDC	260VDC	260VDC	26VAC	51VAC	
V 19	1B3GT	* DO NOT MEASURE.								
V 20	10FP4	0V.	.2VDC	PIN 10 345VDC	PIN 11 135VDC	PIN 12 6.5VAC				

§ TAKEN WITH VACUUM TUBE VOLTMETER.
# MEASURED FROM JUNCTION OF R35, R33, and C46.
* DO NOT MEASURE.

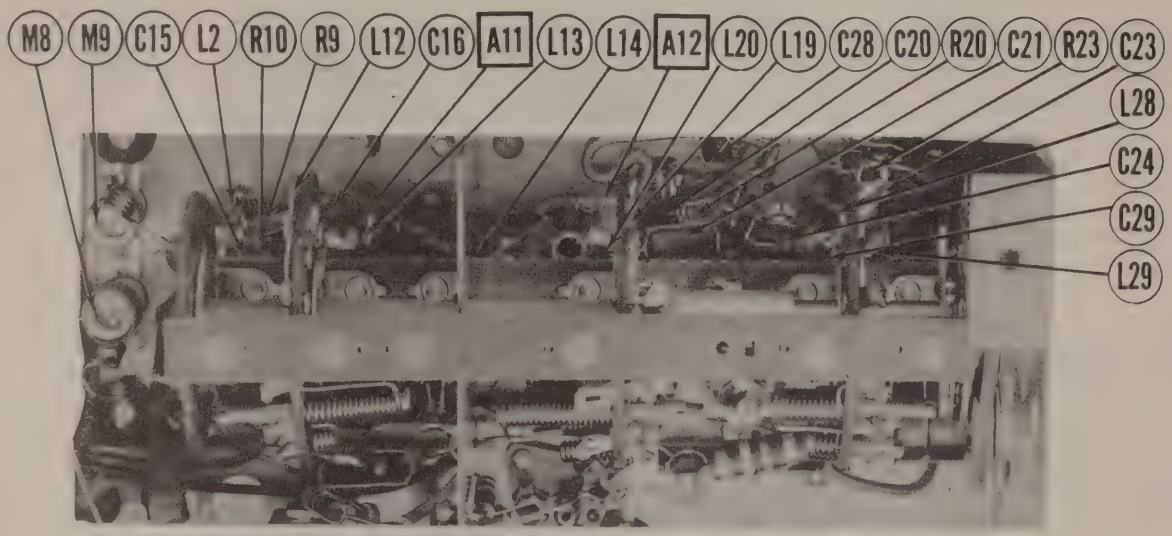
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AU6	0Ω	2.2 Meg.	8Ω	12Ω	†10KΩ	†10KΩ	270Ω		
V 2	6AG5	2.2 Meg.	100Ω	4.5Ω	8Ω	†10.2KΩ	†10.2KΩ	100Ω		
V 3	12AT7	†5.6KΩ	10KΩ	0Ω	1Ω	1Ω	†39K	220KΩ	0Ω	4.5Ω
V 4	6BC5	2.5 Meg.	39Ω	36Ω	33Ω	†1000Ω	†48KΩ	39Ω		
V 5	6BC5	68KΩ	47Ω	30Ω	27Ω	#47Ω	#47Ω	47Ω		
V 6	6BC5	#68KΩ	#47Ω	25Ω	22Ω	†530Ω	†530Ω	#47Ω		
V 7	12AT7	20KΩ	2.2 Meg.	0Ω	12Ω	12Ω	▲8.5KΩ	20KΩ	18KΩ	15.5Ω
V 8	6AU6	8Ω	220Ω	15.5Ω	20Ω	†12KΩ	†40KΩ	220Ω		
V 9	6AU6	56KΩ	1.8Ω	18Ω	13.5Ω	†2000Ω	†140KΩ	1.8Ω		
V 10	6AL5	Inf.	Inf.	8.8Ω	13.5Ω	22KΩ	Inf.	22KΩ		
V 11	6SQ7	33KΩ	4.7 Meg.	0Ω	0Ω	0Ω	†220KΩ	6Ω	1Ω	
V 12	25L6GT	Inf.	52Ω	†450Ω	†39KΩ	650KΩ	1.7KΩ	41Ω	1800Ω	
V 13	6SL7GT	3.5 Meg.	†49KΩ	0Ω	2.2 Meg.	▲27KΩ	0Ω	31.5Ω	30Ω	
V 14	12SN7GT	†4.5 Meg. †7.5 Meg.	▲2.5KΩ	6.3KΩ 4.3KΩ	100KΩ	†4.5 Meg. †7.5Meg.	68KΩ	41Ω	36Ω	
V 15	6AL5	1.1 Meg.	2 Meg.	31.5Ω	37.5Ω	1.1 Meg.	Inf.	110KΩ		
V 16	12SN7GT	3.2 Meg.	†70KΩ	0Ω	54KΩ	▲36KΩ	48Ω	48Ω	37.5Ω	
V 17	19BG6G	1 Meg.	52Ω	0Ω	Inf.	1 Meg.	†58Ω	48Ω	†210Ω	TOP CAP ▲46Ω
V 18	25W4GT	Inf.	Inf.	▲0Ω	190KΩ	†75Ω	†70Ω	18Ω	30Ω	
V 19	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲470KΩ
V 20	10FP4	0Ω	1 Meg.	PIN 10 ▲3.3KΩ	PIN 11 380KΩ	PIN 12 1Ω				

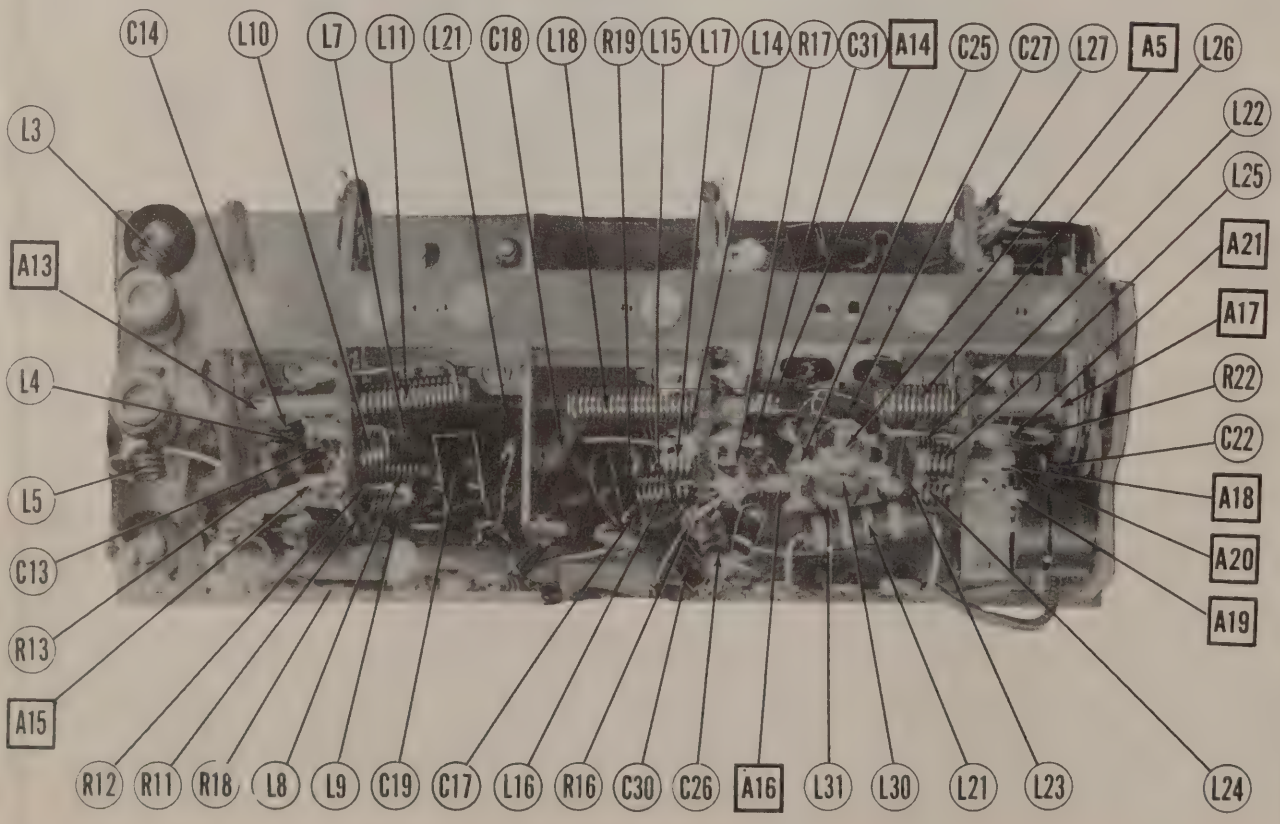
MEASURED FROM JUNCTION OF R35, R33, and C46.
† MEASURED FROM OUTPUT OF M2.
▲ MEASURED FROM PIN 3 OF V18.
NOTE: ALL MEASUREDMENTS TAKEN WITH FOCUS SWITCH IN THE COUNTERCLOCKWISE POSITION.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

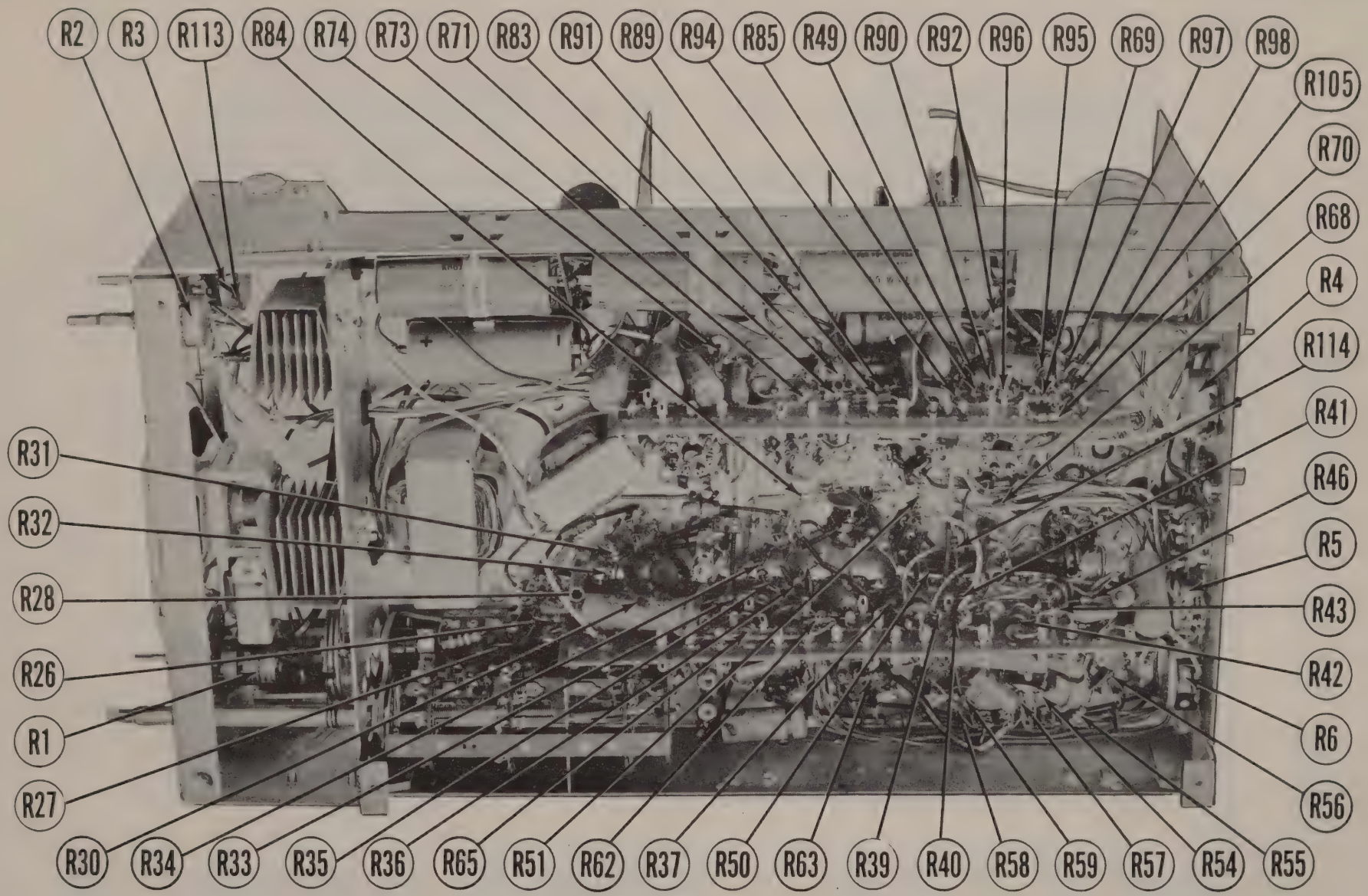


RF TUNER-BOTTOM VIEW



RF TUNER-BOTTOM VIEW

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		EIA BASE TYPE	NOTES
		G. E. PART No.	STANDARD REPLACEMENT		
V1	1st RF Amp.	6AU6	6AU6	7BK	
V2A	2nd RF Amp.	6AG5	6AG5	7BD	
B	2nd RF Amp.	6BC5	6BC5	7BD	
V3	Converter	12AT7	12AT7	9A	
V4A	1st Video IF	6BC5	6BC5	7BD	Receivers manufactured after Jan. 1950 used a type 6BC5 tube in place of the 6AG5.
B	1st Video IF	6AG5	6AG5	7BD	
V5A	2nd Video IF	6BC5	6BC5	7BD	
B	2nd Video IF	6AG5	6AG5	7BD	
V6A	3rd Video IF	6BC5	6BC5	7BD	
B	3rd Video IF	6AG5	6AG5	7BD	
V7	Video Amp.	12AT7	12AT7	9A	
V8	Sound IF	6AU6	6AU6	7BK	
V9	Limiter	6AU6	6AU6	7BK	
V10	Ratio Det.	6AL5	6AL5	6BT	
V11	AF Amp.	6SQ7	6SQ7	8Q	
V12	Audio Output	25L6GT	25L6GT	7AC	
V13	Sync. Amp. -Sync. Sep.	6SL7GT	6SL7GT	8BD	
V14	Vert. Osc. -Vert. Amp.	12SN7GT	12SN7GT	8BD	
V15	Hor. Sycn. Disc.	6AL5	6AL5	6BT	
V16	Hor. AFC-Hor. Osc.	12SN7GT	12SN7GT	8BD	
V17	Hor. Output	19BG6G	19BG6G	5BT	
V18	Damper	25W4GT	25W4GT	4CG	
V19	HV Rect.	1B3GT	1B3GT	3C	
V20A	Picture Tube	10FP4-A	10FP4-A	12C	Used in model 10T6
B	Picture Tube	10BP4	10BP4	12D	Used in model 10T1
C	Picture Tube	10FP4	10FP4	12C	Used in models 10T4, 10T5, 10C101, 10C102
D	Picture Tube	12KP4A	12KP4A	12D	Used in models 12T1, 12C101, 12C102, and 12C105

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	150	150	RCE-091	PRSH150/150			TVA-29	Voltage Doubler Cap.
C2	150	150	RCE-091	PRSH150/150			TVA-29	Voltage Doubler Cap.
C3	60	350	RCE-094	E28D5			TVA-101	Filter
C4	60	350		E28D5			TVA-101	Filter
C5	150	150	RCE-091	PRSH150/150			TVA-29	Filter
C6	150	150	RCE-091	PRSH150/150			TVA-29	Filter
C7A	10	350	RCE-089	AFH2H10D20C			TVL-302	■ Output Plate Decoupling
B	50	100						▲ Focus Control Bypass
C	100	75						Vert. Output Cathode Bypass
C8A	10	450	RCE-100	AFH2J8G2D			TVL-301	▲ Decoupling
B	40	300						■ Decoupling
C	10	150						▲ 2nd V. Amp. Cathode Bypass
C9	30	450	RCE-092	PRSH450/30			TVA-23	Vert. Output Decoupling
C10	1	50	RCE-090	PRS150/4			TVA-11	Stabilizing Cap.
C11	150			GP150M	D6-151	GP2K-150		RF Coupling
C12	150			GP150M	D6-151	GP2K-150		RF Coupling
C13	680		RCW-3027		D6-681			1st RF Plate Decoupling
C14	800		RCW-3027	GP1000M	D6-102	811-001	29C4	1st RF Plate Decoupling
C15	680			GP680M	D6-681	GP2K-680		1st RF Cath. Bypass
C16	3.3	300	RCN-028		D2-3.3	NPOK-3.3		RF Coupling
C17	5000		RCW-3014	BPD-5		811-005	29C1	2nd RF Plate Decoupling
C18	680			GP680M	D6-681	GP2K-680		2nd RF Cath. Bypass
C19A	800		RCN-027	GP1000M	D6-102	GP2L-001	29C7	1st RF Filament Bypass
B	800			GP1000M	D6-102	GP2L-001		AGC Filter
C20	800		RCW-3027	GP1000M	D6-102	811-001	29C4	2nd RF Filament Bypass
C21	3.3	300	RCN-028		D2-3.3	NPOK-3.3		RF Coupling
C22	12	300			D2-12	GP1K-12		Osc. Feedback
C23	800		RCW-3027	GP1000M	D6-102	811-001	29C4	Osc. Plate Bypass
C24	1.5		RCW-1045	SIl. 5CNPO	D2-1.5	NPOK-1.5		Osc. Coupling
C25	5	300			D2-4.7	NPOK-5		Fixed Trimmer
C26	1500		RCW-026	GP1500M	D6-152	GP2L-0015		Conv. Plate Decoupling
C27	22	200			D6-220	GP1K-22		Fixed Trimmer
C28	800		RCW-3027	GP1000M	D6-102	811-001	29C4	Conv. Filament Bypass
C29	800		RCW-3027	GP1000M	D6-102	811-001	29C4	Conv. Filament Bypass
C30	800		RCW-3027	GP1000M	D6-102	811-001	29C4	1st V. IF Cath. Bypass
C31	5	300			D2-4.7	NPOK-5		IF Coupling
C32	.5	200		P288-5				AGC Filter
C33	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	1st V. IF Screen Bypass
C34	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	1st V. IF Decoupling
C35	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	1st V. IF Fil. Bypass
C36	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	RF Bypass
C37	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	RF Bypass
C38	56							Fixed Trimmer *
C39	5	300		1468-000005	D2-4.7	NPOK-5	MS-55	IF Coupling
C40	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	2nd V. IF Cath. Bypass
C41	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	2nd V. IF Fil. Bypass
C42	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	2nd V. IF Decoupling
C43	22	200			D6-220	GP1K-22	MS-425	Fixed Trimmer
C44	5	300		1468-000005	D2-4.7	NPOK-5	MS-55	IF Coupling
C45	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	RF Bypass
C46	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	RF Bypass
C47	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	3rd V. IF Decoupling
C48	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	3rd V. IF Decoupling
C49	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	3rd V. IF Fil. Bypass
C50	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	RF Bypass
C51	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	AGC Filter
C52	.02	400		P488-02			TM-12	Video Coupling
C53	18	300			D6-180	GP1K-18	MS-42	IF Coupling
C54	100	500		1468-0001	D6-101	GP1K-100	1FM-31	Fixed Trimmer
C55	6	500						Fixed Trimmer
C56	.1	400		P488-1			TM-1	Video Coupling
C57	.005	600		P688-005	D6-502	811-005	TM-25	Video Coupling
C58	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	1st S. IF Cath. Bypass

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C59	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	1st S. IF Screen Bypass
C60	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	1st S. IF Fil. Bypass
C61	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	1st S. IF Plate Decoupling
C62	100	500		1468-0001	D6-101	GP1K-100	1FM-31	2nd S. IF Grid Filter
C63	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	2nd S. IF Screen Bypass
C64	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	2nd S. IF Plate Decoupling
C65	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	2nd S. IF Fil. Bypass
C66	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	RF Bypass
C67	.001	600		P688-001	D6-102	GP2L-001	TM-21	Diode Load Cap.
C68	.002	600		P688-002	D6-202	GP2M-002	TM-22	De-emphasis
C69	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Audio Coupling
C70	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Vol. Control Bypass
C71	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Audio Coupling
C72	.003	600		P688-003	D6-302	GP2M-003	TM-23	De-emphasis
C73	.01	600		P688-01	D6-103	811-01	TM-11	Audio Coupling
C74	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Focus Control Bypass
C75	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Output Cathode Bypass
C76	.1	400		P488-1			TM-1	Output Screen Bypass
C77	.005	1000	RCC-059	P1088-005			MB-25	Output Plate Bypass
C78	.02	600		P688-02			TM-12	Sync. Coupling
C79	220	500		1468-00025	D6-221	GP2K-220	1FM-325	Sync. Coupling
C80	.01	600	RCN-018	P688-01	D6-103	811-01	TM-11	Sync. Coupling
C81	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	AGC Filter
C82	.001	600		P688-001	D6-102	GP2L-001	TM-21	Integrator Net.
C83	.002	600		P688-002	D6-202	GP2M-002	TM-22	Integrator Net.
C84	390	500		1468-0004	D6-391	GP2K-390	1FM-34	Vert. Sync. Coupling
C85	1000	3000	RCU-290					Vert. MV Feedback
C86	470	500		1469-0005	D6-471	GP2K-470	1FM-35	Vert. MV Grid Cap.
C87	.1	200		P288-1			TM-1	Vert. MV Cath. Bypass
C88	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Vert. Discharge
C89	.03	600		P688-03			TM-13	Vert. Discharge
C90	130	500						Hor. Sync. Coupling
C91	.047	600		P688-045			TM-15	Hor. Feedback
C92	100	500		1468-0001	D6-101	GP1K-100	1FM-31	AFC Filter
C93	.02	200		P488-02			TM-12	AFC Filter
C94	680	500			D6-681	GP2K-680	1FM-37	AFC Filter
C95	.01	600	RCN-018	P688-01	D6-103	811-01	TM-11	AFC Filter
C96	3900	500		1467-004			1FM-24	AFC Filter
C97	.05	200		P288-05			TM-15	AFC Filter
C98	470	500		1468-0005	D6-471	GP2K-470	1FM-35	Hor. AFC Coupling
C99	1800	500			D6-182	GP2M-0018		Hor. Osc. Grid Cap.
C100	220	500		1468-00025	D6-221	GP2K-220	1FM-325	Hor. Discharge
C101	1000	500		1467-001	D6-102	GP2L-001	1FM-21	Fixed Trimmer
C102	3900	500		1464-004			MS-24	Hor. Discharge
C103	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Hor. Sweep Coupling
C104	6	800	RCU-286					Hor. Feedback
C105	22	300		1468-000025	D6-220	GP1K-22	MS-425	Hor. Output Grid Bypass
C106	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Hor. Output Screen Bypass
C107	22	300		1468-000025	D6-220	GP1K-22	MS-425	Hor. Output Fil. Bypass
C108	220	500		1468-00025	D6-221	GP2K-220	1FM-325	Hor. Output Fil. Bypass
C109	.0022	1000		P1088-0022			MB-22	Hor. Sweep Coupling
C110	.1	600		P688-1			TM-1	Damper Filter
C111	.1	600		P688-1			TM-1	Damper Filter
C112	.5	200		P288-5			TC-5	Hor. Sweep Coupling
C113	500	20000	RCE-023					HV Filter
C114	.05	600		P688-05			TM-15	Integrator Net.
C115	.02	600		P688-02			TM-12	Vert. Sweep Coupling
C116	.2	200		P488-22			TC-2	Pic. Tube Cath. Dec.
C117	.05	200		P288-05			TM-15	2nd V. Amp. Cath. Bypass
C118	.047	600		P688-047			TM-15	Line Isolation
C119	220	500		1468-00025	D6-221	GP2K-220	1FM-325	Filament Bypass
C120	220	500		1468-00025	D6-221	GP2K-220	1FM-325	Filament Bypass

* Not used in all models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA G. E. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	100KΩ	1/2		B11-128 *			Focus control-panel
B	500KΩ	1/2	RRC-099	B13-137 *	K68J881-1	SBB-522-S	Volume control-rear
C	Shaft End			E-202 *			Attach per instructions in "Concentrikit".
D	Switch			76-1 *			Attach per instructions in "Concentrikit".
R2A	2 Meg.	1/2		B11-139 *			Contrast control-panel
B	500KΩ	1/2	RRC-109	B13-137 *	K69J604-1	SBB-523	Brightness control-rear
C	Shaft End			E-202 *			Attach per instructions in "Concentrikit".
R3A	100KΩ	1/2		B11-128 *			Vert. hold control-panel
B	100KΩ	1/2	RRC-098	B11-128 *	K68J880-1	SBB-521	Horiz. hold control-rear
C	Shaft End			E-202 *			Attach per instructions in "Concenctrikit"
R4A	25KΩ	1/2	RRC-108	Q11-120	AM-40-S	AN-26	Horiz. drive control
B	Shaft		Not Req.	RQ	KSS-3 #	AK-1	Attach to R4A per instructions
R5A	3 Meg.	1/2	RRC-096	Q11-140	K68J766-1	AN-84	Height control
B	Shaft		Not Req.	RQ	Not Req.	AK-1	Attach to R5A per instructions
R6	2000Ω	2	RRC-095	W-2000 #	43-2000 #	V-131 #	Vert. linearity control-Wire Wound

* Additional parts to be used with "concentrikit".
# File slot in shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA G. E. PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R7	3.3 Meg.	1/2	URD-133		Ant. Loading
R8	3.3 Meg.	1/2	URD-133		Ant. Loading
R9	1000Ω	1/2	URD-049	BTS-1000	1st RF Grid
R10	270Ω	1/2	URD-035		1st RF Cathode
R11	1000Ω	1/2	URD-049	BTS-1000	1st RF Plate Coil Shunt
R12	470Ω	1/2	URD-041	BTS-470	1st RF Plate Coil Shunt
R13	10KΩ 5%	1	URE-073		1st RF Plate Decoupling
R14	100Ω	1/2	URD-025		2nd RF Cathode
R15	6800Ω	1/2	URD-069		2nd RF Plate Coil Shunt-See Note 1

RESISTORS (

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA G:E. PART No.	IRC PART No.
R16	1000Ω	1/2	URD-049	BTS-1000
R17	100Ω	1/2	URD-025	
R18	5100Ω 5%	1	URE-1066	
R19	5100Ω 5%	1	URE-1066	
R20	220KΩ	1/2	URD-105	
R21	39KΩ	1	URE-087	
R22	10KΩ	1/2	URD-073	
R23	5600Ω	1	URE-067	
R24	470Ω 20%	1/2	URD-041	BTS-470
R25	470KΩ 20%	1/2	URD-113	BTS-470K
R26	22KΩ	1/2	URD-081	
R27	39Ω	1/2	URD-015	
R28	68KΩ	1/2	URD-093	
R29	47KΩ	1/2	URD-089	
R30	1000Ω 20%	1/2	URD-049	BTS-1000
R31	68KΩ	1/2	URD-093	
R32	47Ω	1/2	URD-017	
R33	47Ω	1/2	URD-017	
R34	68KΩ	1/2	URD-093	
R35	47Ω	1/2	URD-017	
R36	470Ω 20%	1/2	URD-041	BTS-470
R37	3600Ω 5%	1/2	URD-1062	
R38	22KΩ	1/2	URD-081	BTS-22K
R39	2.2 Meg.	1/2	URD-129	BTS-2.2 Meg.
R40	1600Ω 5%	1/2	URD-055	
R41	18KΩ	2	URF-079	BT-2-18K
R42	4700Ω	2	URF-065	BT-2-4700
R43	220Ω	1/2	URD-033	
R44	10KΩ	1/2	URD-073	BTS-10K
R45	470KΩ	1/2	URD-113	BTS-470K
R46	1 Meg.	1/2	URD-121	BTS-1 Meg.
R47	22KΩ	1/2	URD-081	BTS-22K
R48	220KΩ	1/2	URD-105	BTS-220K
R49	1.5 Meg. 20%	1/2	URD-125	BTS-1.5 Meg.
R50	220Ω	1/2	URD-033	
R51	39KΩ	1/2	URD-087	
R52	10KΩ	1/2	URD-073	
R53	56KΩ	1/2	URD-091	BTS-56K
R54	1000Ω	1/2	URD-049	BTS-1000
R55	470KΩ	1/2	URD-113	
R56	100KΩ 5%	1/2	URD-1097	BTS-100K-5%
R57	270Ω	1/2	URD-035	
R58	22KΩ 5%	1/2	URD-1081	BTS-22K-5%
R59	22KΩ 5%	1/2	URD-1081	BTS-22K-5%
R60	22KΩ	1/2	URD-081	BTS-22K
R61	4.7 Meg.	1/2	URD-137	BTS-4.7 Meg
R62	220KΩ	1/2	URD-105	BTS-220K
R63	33KΩ	1/2	URD-085	BTS-33K
R64	1000Ω	1/2	URD-049	
R65	470KΩ	1/2	URD-113	BTS-470K
R66	100Ω	1/2	URD-025	BW-1/2-100
R67	180KΩ	1/2	URD-103	BTS-180K
R68	2.2 Meg.	1/2	URD-129	BTS-2.2 Meg
R69	22KΩ	1	URE-081	BTA-22K
R70	1 Meg.	1/2	URD-121	BTS-1 Meg.
R71	47KΩ	1/2	URD-089	BTS-47K
R72	82KΩ	1/2	URD-095	BTS-82K
R73	39KΩ	1/2	URD-087	BTS-39K
R74	100KΩ 5%	1/2	URD-1097	BTS-100K-5%
R75	68KΩ	1/2	URD-093	BTS-68K
R76	4.3 Meg. 5%	1/2	URD-1136	
R77	4700Ω	1/2	URD-065	BTS-4700
R78	1000Ω	1/2	URD-049	BTS-1000
R79	3300Ω 5%	1	URE-1061	BTA-3300-5%
R80	100KΩ 5%	1/2	URD-1097	BTS-100K-5%
R81	1000Ω	1	URE-049	BTA-1000
R82	2700Ω	1/2	URD-059	BTS-2700
R83	1 Meg.	1/2	URD-121	BTS-1 Meg.
R84	1 Meg.	1/2	URD-121	BTS-1 Meg.
R85	180KΩ	1/2	URD-103	BTS-180K
R86	150KΩ	1/2	URD-101	BTS-150K
R87	1 Meg.	1/2	URD-121	BTS-1 Meg.
R88	33KΩ	1/2	URD-085	BTS-33K
R89	68KΩ	1	URE-093	BTA-68K
R90	180KΩ	1/2	URD-103	BTS-180K
R91	150KΩ 5%	1	URE-101	BTA-150K-5%
R92	150KΩ	1	URE-101	BTA-150K
R93	27KΩ	1/2	URD-083	BTS-27K
R94	68KΩ	1/2	URD-093	BTS-68K
R95	33KΩ	1	URE-085	BTA-33K
R96	4700Ω	1/2	URD-065	BTS-4700
R97	1 Meg.	1/2	URD-121	BTS-1 Meg.
R98	15KΩ	1/2	URD-077	BTS-15K
R99	22KΩ	1/2	URD-081	
R100	150Ω 20%	1/2	URD-029	BW-1/2-150
R101	470KΩ	2	URF-113	
R102	39KΩ	1	URE-087	BTA-39K
R103	470Ω	1	URE-041	BTA-470
R104	1200Ω	1/2	URD-051	BTS-1200
R105	3300Ω	1	URE-061	BTA-3300
R106	470KΩ	1	URE-113	
R107	1500Ω 20%	1	URE-053	BTA-1500
R108	430Ω 5%	1	URE-1040	
R109	820Ω 5%	1	URE-1047	BTA-820-5%
R110	820Ω 5%	1	URE-1047	BTA-820-5%
R111	1700Ω	5	RRW-045	
R112	220Ω	1	URE-033	BW-1-220
R113	470KΩ	1/2	URD-113	BTS-470K
R114	470KΩ	1/2	URD-113	BTS-470K
R115	4.6Ω	5	RRW-048	
R116	75Ω	10	RRW-041	AB-75
R117	75Ω	10	RRW-041	AB-75

Note 1. Not used in all models.
Note 2. Some models use 10KΩ resistor in this application

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C81	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	1st S. IF Screen Bypass
C82	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	1st S. IF Fil. Bypass
C83	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	1st S. IF Plate Decoupling
C84	.02	500		.468-.0001	D6-101	GP1K-100	1FM-31	2nd S. IF Grid Filter
C85	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	2nd S. IF Screen Bypass
C86	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	2nd S. IF Plate Decoupling
C87	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	2nd S. IF Fil. Bypass
C88	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	RF Bypass
C89	.001	600		P688-001	D6-102	GP2L-001	TM-21	Diode Load Cap.
C90	.002	600		P688-002	D6-202	GP2M-002	TM-22	De-emphasis
C91	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Audio Coupling
C92	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Vol. Control Bypass
C93	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Audio Coupling
C94	.003	600		P688-003	D6-302	GP2M-003	TM-23	De-emphasis
C95	.01	600		P688-01	D6-103	811-01	TM-11	Audio Coupling
C96	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Focus Control Bypass
C97	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Output Cathode Bypass
C98	-	400		P488-1			TM-1	Output Screen Bypass
C99	.005	1000	RCC-050	P1068-005			MB-25	Output Plate Bypass
C100	.02	600		P688-02			TM-12	Sync. Coupling
C101	220	500		1468-00025	D6-221	GP2K-220	1FM-325	Sync. Coupling
C102	.1	500	RCN-018	P688-01	D6-103	811-01	TM-11	Sync. Coupling
C103	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	AGC Filter
C104	.1	400		P688-001	D6-102	GP2L-001	TM-21	Integrator Net.
C105	.002	600		P688-002	D6-202	GP2M-002	TM-22	Integrator Net.
C106	250	300		1468-0004	D6-391	GP2K-390	1FM-34	Vert. Sync. Coupling
C107	.003	3000	RCU-290					Vert. MV Feedback
C108	470	5%		1469-0005	D6-471	GP2K-470	1FM-35	Vert. MV Grid Cap.
C109	-	200		P288-1			TM-1	Vert. MV Cath. Bypass
C110	.5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Vert. Discharge
C111	.01	600		P688-03			TM-13	Vert. Discharge
C112	120	200						Hor. Sync. Coupling
C113	.047	500		P688-045			TM-15	Hor. Feedback
C114	100	500		1468-0008	D6-101	GP1K-100	1FM-31	AFC Filter
C115	.02	2000		P488-02			TM-12	AFC Filter
C116	680	500			D6-681	GP2K-680	1FM-37	AFC Filter
C117	.01	600	RCN-018	P688-01	D6-103	811-01	TM-11	AFC Filter
C118	5600	500		1467-004			1FM-34	AFC Filter
C119	.005	500		P288-05			TM-15	AFC Filter
C120	470	500		1468-0005	D6-471	GP2K-470	1FM-35	Hor. AFC Coupling
C121	.0018	500			D6-182	GP2M-0018		Hor. Osc. Grid Cap.
C100	220	500		1468-00025	D6-221	GP2K-220	1FM-325	Hor. Discharge
C101	1000	500		1467-001	D6-102	GP2L-001	1FM-31	Pixel Trimmer
C102	3900	500		1464-004			MS-24	Hor. Discharge
C103	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Hor. Sweep Coupling
C104	6	600	RCU-286					Hor. Feedback
C105	22	300		1468-000025	D6-220	GP1K-22	MS-425	Hor. Output Grid Bypass
C106	5000		RCW-3014	BPD-5	D6-502	811-005	29C1	Hor. Output Screen Bypass
C107	22	300		1468-000025	D6-220	GP1K-22	MS-425	Hor. Output Fil. Bypass
C108	220	500		1468-00025	D6-221	GP2K-220	1FM-325	Hor. Output Fil. Bypass
C109	.0022	2000		P1068-0022			MB-22	Hor. Sweep Coupling
C110	-	400		P688-1			TM-1	Damper Filter
C111	-	500		P688-1			TM-1	Damper Filter
C112	5	200		P288-5			TC-5	Hor. Sweep Coupling
C113	500	20000	RCE-023					HV Filter
C114	.05	400		P688-05			TM-15	Integrator Net.
C115	.02	600		P688-02			TM-12	Vert. Sweep Coupling
C116	2	200		P488-22			TC-2	Pic. Tube Cath. Dec.
C117	.05	200		P288-05			TM-15	2nd V. Amp. Cath. Bypass
C118	.047	600		P688-047			TM-15	Line Isolation
C119	220	1500		1468-00025	D6-221	GP2K-220	1FM-325	Filament Bypass
C120	220	500		1468-00025	D6-221	GP2K-220	1FM-325	Filament Bypass

* Not used in all models

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA G. E. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	100K...			B... 126 *			Focus control-panel
B	500K...			B12...37 *			Volume control-rear
C	Shaft End		RRC-099	E...002 *	K683881-1	SBB-522-S	Attach per instructions in "Concentrikit".
D	Switch			S6-1 *			Attach per instructions in "Concentrikit".
R2A	2 Meg.			B...139 *			Contrast control-panel
B	Switch		RRC-109	B12...37 *	K693504-1	SBB-523	Brightness control-rear
C	Shaft End			E...202 *			Attach per instructions in "Concentrikit".
R3A	250K...			B...228 *			Vert. hold control-panel
B	250K...		RRC-098	B...228 *	K683880-1	SBB-521	Horiz. hold control-rear
C	Shaft End			E...202 *			Attach per instructions in "Concentrikit"
R4A	25K...		RRC-106	QR-120	AM 40-S	AN-26	Horiz. drive control
B	Shaft		Not Req	RQ	KSS-3 #	AK-1	Attach to R4A per instructions
R5A	3 Meg.		RRC-396	QH-140	K683766-1	AN-84	Height control
B	Shaft		Not Req	RQ	Not Req	AK-1	Attach to R5A per instructions
R6	2000Ω	2	RRC-095	W-2000 #	43-2000 #	V-131 #	Vert. linearity control-Wire Wound

* Additional parts to be used with "concentrikit".
# File slot in shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA G. E. PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R7	2.2 Meg.		URD-133		Ant. Loading
R8	3.3 Meg.		URD-133		Ant. Loading
R9	2000Ω		URD-049	BTS-1000	1st RF Grid
R10	2000Ω		URD-085		1st RF Cathode
R11	2000Ω		URD-043	BTS-1000	1st RF Plate Coil Shunt
R12	470Ω		URD-041	BTS-470	1st RF Plate Coil Shunt
R13	68KΩ 5%		URE-073		1st RF Plate Decoupling
R14	100Ω		URD-025		2nd RF Cathode
R15	68,000Ω		URD-069		2nd RF Plate Coil Shunt-See Note 1

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA G. E. PART No.	IRC PART No.	IDENTIFICATION CODES
R16	1000Ω	1	URD-049	BTS-1000	2nd RF Plate Coil Shunt
R17	100Ω	1	URD-025		2nd RF Plate Coil Shunt
R18	5100Ω 5%	1	URE-1066		2nd RF Plate Decoupling
R19	5100Ω 5%	1	URE-1066		2nd RF Plate Decoupling
R20	220KΩ	½	URD-105		Conv. Grid
R21	39KΩ	1	URE-087		Conv. Plate Decoupling
R22	10KΩ	½	URD-073		Osc. Grid
R23	5600Ω	1	URE-067		Osc. Plate
R24	470Ω 20%	½	URD-041	BTS-470	AGC Network
R25	470KΩ 20%	½	URD-113	BTS-470K	AGC Network
R26	22KΩ	½	URD-081		1st Video IF Grid
R27	39Ω	½	URD-015		1st Video IF Cathode
R28	68KΩ	½	URD-093		2nd Video IF Transformer Shunt
R29	47KΩ	½	URD-089		1st Video IF Screen
R30	1000Ω 20%	½	URD-049	BTS-1000	1st Video IF Decoupling
R31	68KΩ	½	URD-093		2nd Video IF Grid
R32	47Ω	½	URD-017		2nd Video IF Cathode
R33	47Ω	½	URD-017		2nd Video IF Decoupling
R34	68KΩ	½	URD-093		3rd Video IF Grid
R35	47Ω	½	URD-017		3rd Video IF Cathode
R36	470Ω 20%	½	URD-041	BTS-470	3rd Video IF Decoupling
R37	3600Ω 5%	1	URD-1062		Video Det. Load
R38	22KΩ	½	URD-081	BTS-22K	AGC Network
R39	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Video Amp. Grid
R40	15000Ω 5%	½	URD-055		Video Amp. Plate
R41	18KΩ	2	URF-079	BT-2-18K	Video Amp. Cathode
R42	4700Ω	2	URF-065	BT-2-4700	Video Amp. Plate
R43	220Ω	½	URD-033		Video Amp. Plate
R44	10KΩ	½	URD-073	BTS-10K	Isolation
R45	470KΩ	½	URD-113	BTS-470K	DC Rest. Load
R46	1 Meg.	½	URD-121	BTS-1 Meg.	Picture Tube Grid
R47	22KΩ	½	URD-081	BTS-22K	Voltage Divider
R48	220KΩ	½	URD-105	BTS-220K	Voltage Divider
R49	1.5 Meg. 20%	½	URD-125	BTS-1.5 Meg.	Voltage Divider
R50	220Ω	½	URD-033		Sound IF Cathode
R51	39KΩ	½	URD-087		Sound IF Screen
R52	10KΩ	½	URD-073		Sound IF Plate Decoupling
R53	56KΩ	½	URD-091	BTS-56K	Limiter Grid
R54	1000Ω	½	URD-049	BTS-1000	Limiter Plate Decoupling
R55	470KΩ	½	URD-113		Limiter Screen
R56	100KΩ 5%	1	URD-1097	BTS-100K-5%	Voltage Divider
R57	270Ω	½	URD-035		Balancing
R58	22KΩ 5%	1	URD-1081	BTS-22K-5%	Disc. Diode Load
R59	22KΩ 5%	2	URD-1081	BTS-22K-5%	Disc. Diode Load
R60	22KΩ	2	URD-081	BTS-22K	De-emphasis
R61	4.7 Meg.	½	URD-137	BTS-4.7 Meg.	AF Amp. Grid
R62	220KΩ	½	URD-105	BTS-220K	AF Amp. Plate
R63	33KΩ	½	URD-085	BTS-33K	Isolation
R64	1000Ω	½	URD-049		Parasitic Supp.
R65	470KΩ	½	URD-113	BTS-470K	Output Grid
R66	100Ω	½	URD-025	BW-½-100	Output Cathode
R67	180KΩ	½	URD-103	BTS-180K	Voltage Divider
R68	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Sync. Amp. Grid
R69	22KΩ	1	URE-081	BTA-22K	Sync. Amp. Plate
R70	1 Meg.	½	URD-121	BTS-1 Meg.	Sync. Coupling
R71	47KΩ	½	URD-089	BTS-47K	Sync. Sep. Plate
R72	82KΩ	½	URD-095	BTS-82K	Integrator
R73	39KΩ	½	URD-087	BTS-39K	Integrator
R74	100KΩ 5%	½	URD-1097	BTS-100K-5%	Vert. Osc. Grid
R75	68KΩ	½	URD-093	BTS-68K	Vert. Osc. Cathode
R76	4.3 Meg. 5%	½	URD-1136		Vert. Osc. Plate
R77	4700Ω	½	URD-065	BTS-4700	Vert. Peaking
R78	1000Ω	½	URD-049	BTS-1000	Vert. Amp. Cathode
R79	3300Ω 5%	1	URE-1061	BTA-3300-5%	Vert. Amp. Cathode
R80	100KΩ 5%	½	URD-1097	BTS-100K-5%	Feedback Network
R81	1000Ω	1	URE-049	BTA-1000	Voltage Divider
R82	2700Ω	½	URD-059	BTS-2700	Differentiator
R83	1 Meg.	½	URD-121	BTS-1 Meg.	Horiz. AFC Diode Load
R84	1 Meg.	½	URD-121	BTS-1 Meg.	Horiz. AFC Diode Load
R85	180KΩ	½	URD-103	BTS-180K	Feedback Network
R86	150KΩ	½	URD-101	BTS-150K	Horiz. AFC Filter Network
R87	1 Meg.	½	URD-121	BTS-1 Meg.	Horiz. AFC Grid
R88	33KΩ	½	URD-085	BTS-33K	Horiz. AFC Filter Network
R89	68KΩ	1	URE-093	BTA-68K	Horiz. AFC Plate
R90	180KΩ	½	URD-103	BTS-180K	Voltage Divider
R91	150KΩ 5%	1	URE-101	BTA-150K-5%	Feedback Network
R92	150KΩ	1	URE-101	BTA-150K	Feedback Network
R93	27KΩ	½	URD-083	BTS-27K	Horiz. Peaking
R94	68KΩ	½	URD-093	BTS-68K	Horiz. Osc. Grid
R95	33KΩ	1	URE-085	BTA-33K	Horiz. Osc. Plate
R96	4700Ω	½	URD-065	BTS-4700	Horiz. Peaking-See Note 2
R97	1 Meg.	½	URD-121	BTS-1 Meg.	Horiz. Output Grid
R98	15KΩ	½	URD-077	BTS-15K	Horiz. Output Grid
R99	22KΩ	½	URD-081		Parasitic Supp.
R100	150Ω 20%	½	URD-029	BW-½-150	Horiz. Output Screen
R101	470KΩ	2	URF-113		Current Limiting
R102	39KΩ	1	URE-087	BTA-39K	Output Screen
R103	470Ω	1	URE-041	BTA-470	Horiz. Linearity Coil Shunt
R104	1200Ω	1	URD-051	BTS-1200	Horiz. Centering Network
R105	3300Ω	1	URE-061	BTA 3300	Filter
R106	470KΩ	1	URE-113		HV Filter
R107	1500Ω 20%	1	URE-053	BTA-1500	Vert. Amp. Decoupling
R108	430Ω 5%	1	URE-1040		Focus Coil Shunt
R109	820Ω 5%	1	URE-1047	BTA-820-5%	Focus Coil Shunt
R110	820Ω 5%	1	URE-1047	BTA-820-5%	Focus Coil Shunt
R111	1700Ω	5	RRW-045		Focus Coil Shunt-Wire Wound
R112	220Ω	1	URE-033	BW-1-220	Filter
R113	470KΩ	½	URD-113	BTS-470K	Voltage Divider
R114	470KΩ	½	URD-113	BTS-470K	Isolation
R115	4.6Ω	5	RRW-048		Surge Limiter-Wire Wound
R116	75Ω	10	RRW-041	AB-75	Filament Dropping-Wire Wound
R117	75Ω	10	RRW-041	AB-75	Filament Dropping-Wire Wound

Note 1. Not used in all models.
Note 2. Some models use 10KΩ resistor in this application.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA G. E. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T1	40Ω	370Ω	RTO-071		HVO-6		Hor. Output Trans.
	SEC. 2	SEC. 3					
	24Ω Tap @ 18Ω & 12Ω	0Ω					
T2	1.2KΩ	7.5Ω	RTO-064	A-8112 ①	A-3036	TSO-5	Vert. Output Trans.
T3A	16Ω		RLD-013		MD-3		Hor. Deflection Coil
B	64Ω						Vert. Deflection Coil
T4	1.3KΩ		RLF-026		MF-2		Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA G. E. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T5	2.5KΩ	3.4Ω	175Ω	.57Ω	RTO-062	A-3876 ②	A-2928 ②	RO-2 ②	② Bend mounting tabs down, file out slots and mount on original bracket.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 m)	REPLACEMENT DATA G. E. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.230A	58Ω	1 Henry	RTL-096		C-2974		

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA G. E. PART No.	MEISSNER PART No.	NOTES
L2	Ant. Coil	0Ω		RLI-083		
L3	Ant. Coil	0Ω		RLC-099		
L4	Ant. Coil	0Ω		RLI-083		
L5	Ant. Coil	0Ω		RLC-099		
L6	Ant. Trans.	0Ω		RLF-023		
L7	RF Coil	0Ω		RLI-070		Ch. 2
L8	RF Coil	0Ω		RLI-071		Ch. 3
L9	RF Coil	0Ω		RLI-072		Ch. 4
L10	RF Coil	0Ω		RLI-106		Ch. 5
L11	RF Coil	0Ω		RLI-074		Ch. 6
L12	RF Coil	0Ω				Ch. 7 to 12- Part of tuner.
L13	RF Coil	0Ω		RLI-075		Ch. 13
L14	RF Coil	0Ω		RLI-098		Ch. 2
L15	RF Coil	0Ω		RLI-077		Ch. 3
L16	RF Coil	0Ω		RLI-073		Ch. 4
L17	RF Coil	0Ω		RLI-107		Ch. 5
L18	RF Coil	0Ω		RLI-080		Ch. 6
L19	RF Coil	0Ω				Ch. 7 to 12-Part of tuner.
L20	RF Coil	0Ω		RLI-081		Ch. 13
L21	RF Choke	0Ω		RLF-024		
L22	Osc. Coil	0Ω		RLC-095		Ch. 2
L23	Osc. Coil	0Ω		RLC-096		Ch. 3
L24	Osc. Coil	0Ω		RLI-099		Ch. 4
L25	Osc. Coil	0Ω		RLC-097		Ch. 5
L26	Osc. Coil	0Ω		RLC-098		Ch. 6
L27	Osc. Coil	0Ω				Ch. 7 to 12-Part of tuner.
L28	Osc. Coil	0Ω		RCL-099		Ch. 13
L29	Osc. Cath. Choke	0Ω		RLI-003		1.4 microhenries
L30	47.25MC Trap	.1Ω		RLP-016		Wound on same form with L31
L31	1st Video IF	.1Ω		RLP-016		Wound on same form with L30
L32	41.25MC Trap	.1Ω		RLI-096		Wound on same form with L33
L33	2nd Video IF	.1Ω		RLI-096		Wound on same form with L32
L34	47.25MC Trap	.1Ω		RLI-110		Wound on same form with L35
L35	3rd Video IF	.1Ω		RLI-110		Wound on same form with L34
L36A	RF Choke	.1Ω		RLX-029		Part of video Det. assembly. M4 Part # RLX-029.
B	RF Choke	2.1Ω		RLF-024		Part of video Det. assembly. M4 Part #RLX-029.
L37	RF Choke	2.1Ω		RLF-034		31 microhenries
L38	Peaking	6.9Ω		RLI-038		
L39	Peaking	7.8Ω		RLI-093		Wound on 6800Ω resistor.
L40	4.5MC Trap	.5Ω		RLI-100		
L41	Peaking	5Ω		RLI-108	19-1920	110 microhenries. Red identification dot.
L42	Peaking	7.8Ω		RLI-093		Wound on 6800Ω resistor.
L43	Peaking	6.9Ω		RLI-038	19-1921	165 microhenries.
L44	Peaking	5Ω		RLI-109	19-1921	130 microhenries.
L45	RF Choke	2Ω		RLI-085		2 microhenries.
L46	Sound IF	3.2Ω	3.2Ω	RLI-097		
L47	Ratio Det. Trans.	4Ω	.5Ω	RTD-008		
L48	Horiz. Osc. Trans.	115Ω		RLC-091		Tapped at 66Ω
L49	Width	5.5Ω		RLD-019		
L50	Horiz. Lin.	7Ω		RLD-020		
L51	Fil. Choke	2.5Ω		RLI-085		
L52	Fil. Choke	2.5Ω		RLI-085		
L53	Fil. Choke	2.5Ω		RLI-085		
L54	Fil. Choke	2.5Ω		RLI-085		
L55	Fil. Choke	2.5Ω		RLI-085		
L56	Limiter Cathode Chk.	2.5Ω		RLI-085		2 microhenries

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

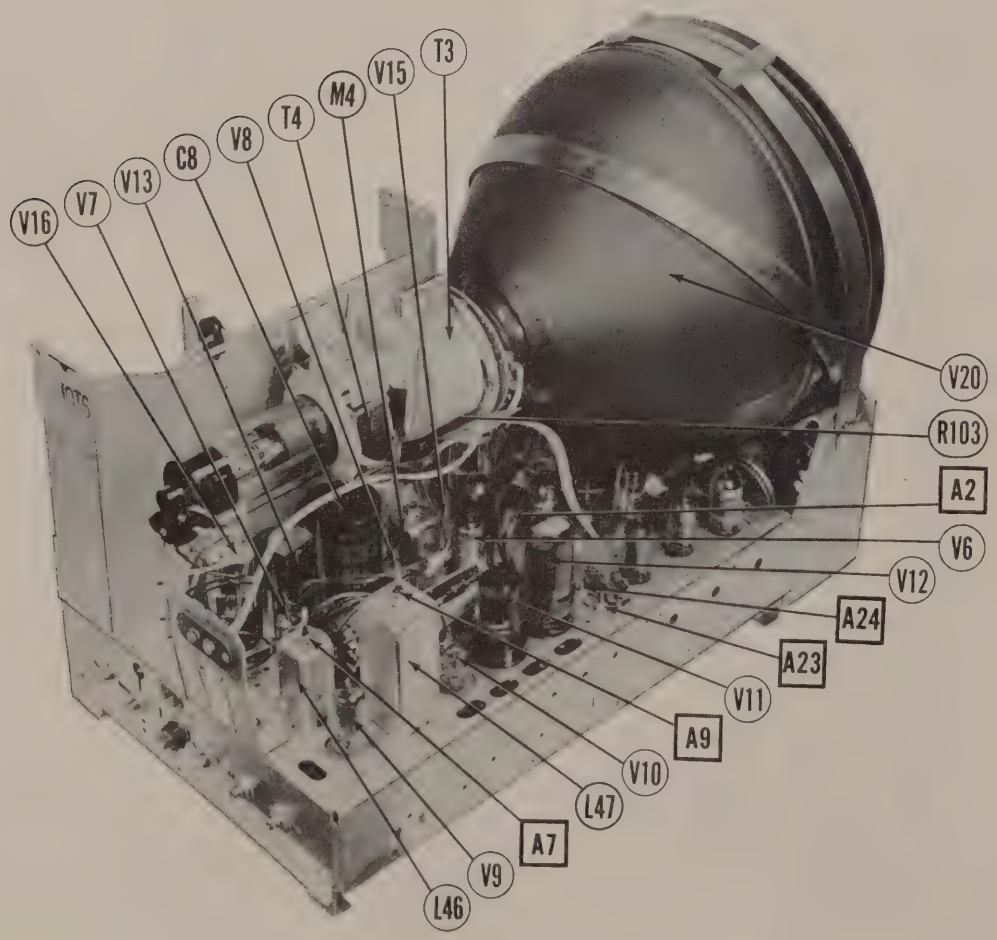
ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	G. E. PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.4Ω		4J4 ③	4A07 ③	③ Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	G. E. PART No.	SYLVANIA PART No.		
M1	.230A	RER-004	NF-5		
M2	.230A	RER-004	NF-5		

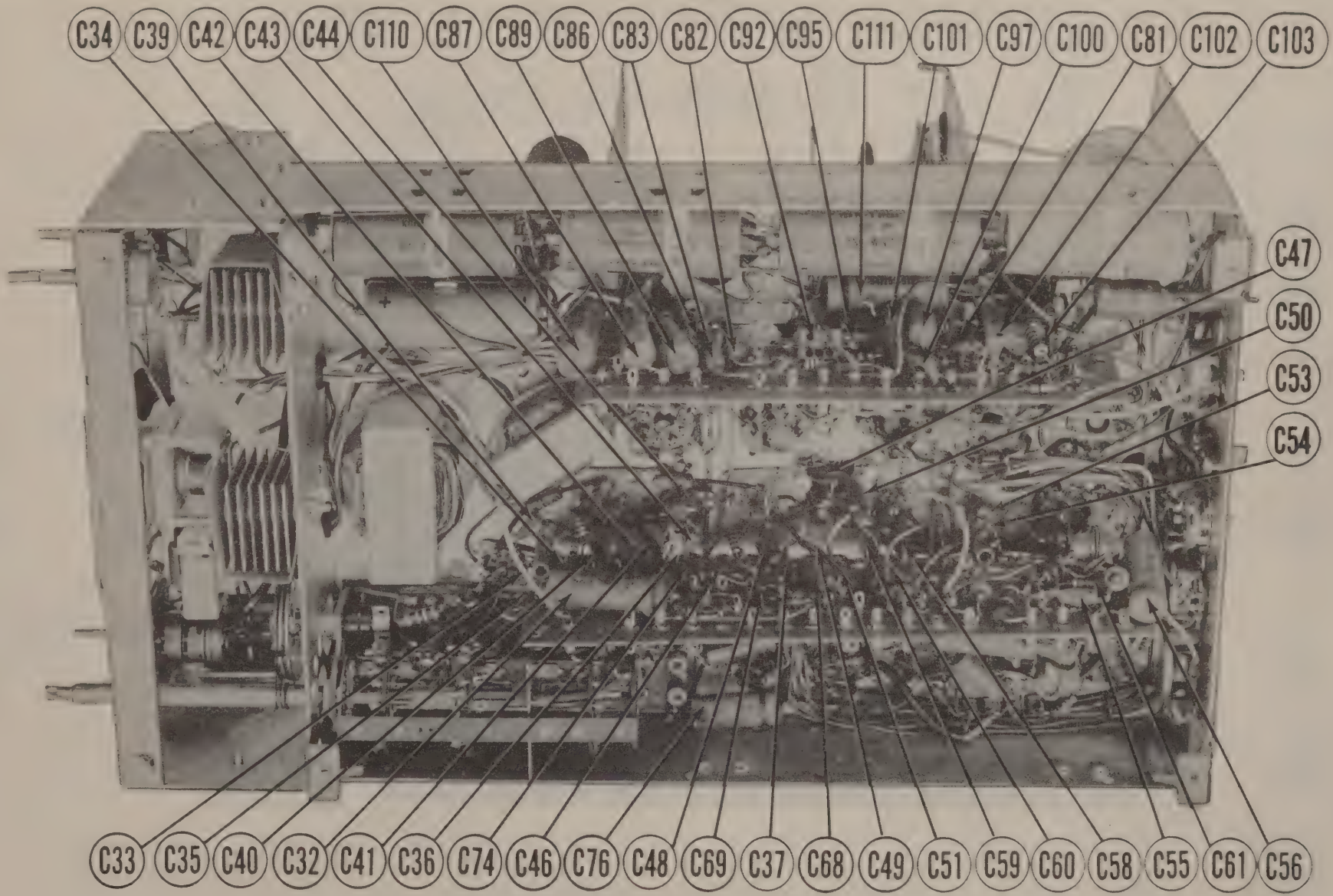
MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M3	RF Tuner	RJX-036	Complete with tubes.
M4	Video Det. Assembly	RLX-029	Complete with 2 coils, 2 capacitors and 1N64 crystal
M5	Crystal		1N65 (DC Restorer)
M6	Switch	RSW-066	Course focus control
M7	Thermal Cut Out	RSR-002	
M8	Ant. Trimmer	RCY-060	
M9	Ant. Trimmer	RCY-060	
	Knob	RKD-193	On-Off volume
	Knob	RKD-193	Horiz. hold
	Knob	RKD-193	Brightness
	Knob	RKD-197	Focus
	Knob	RKD-197	Vert. hold
	Knob	RKD-197	Contrast
	Knob	RKD-192	Channel Selector
	Knob	RKD-196	Tuning

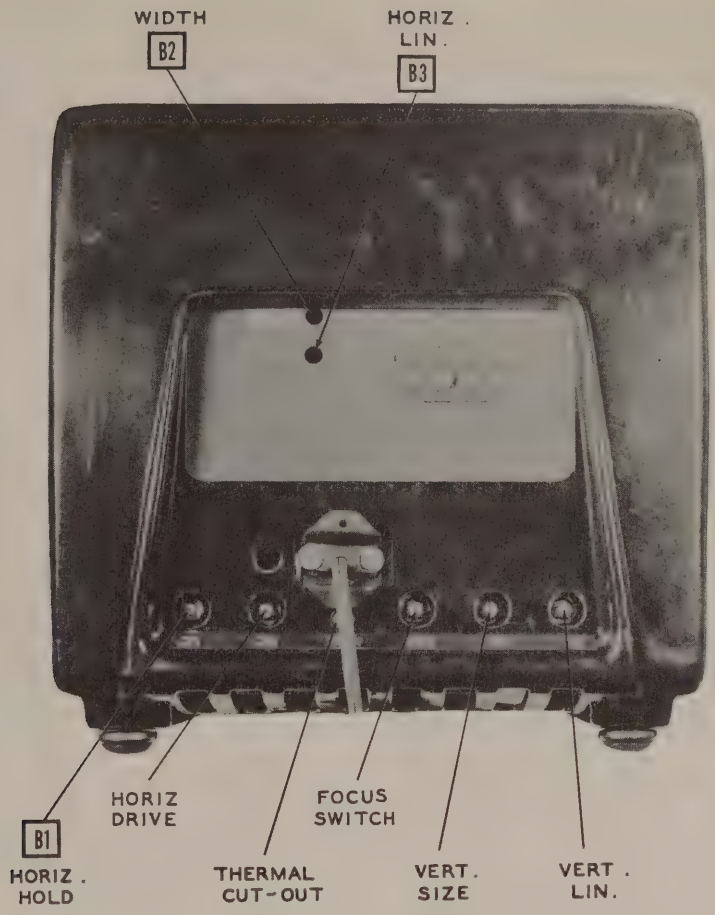


CHASSIS-TOP VIEW

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Turn the set on and tune in a TV station.

Turn the horizontal hold control to the center of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. When B1 is properly adjusted, it will be possible to turn the horizontal hold control approximately 45° either side of its mid-position before the picture falls out of synchronism.

HORIZONTAL LINEARITY ADJUSTMENTS

Turn the horizontal drive control 1/3 turn from maximum counter-clockwise. If white vertical bars, or black beaded lines appear in the picture, turn the drive control either way just enough to remove the lines.

Adjust the width slug (B2) until the right and left edges of the picture extend approximately 1/8 inch beyond the extreme right and left edges of the mask.

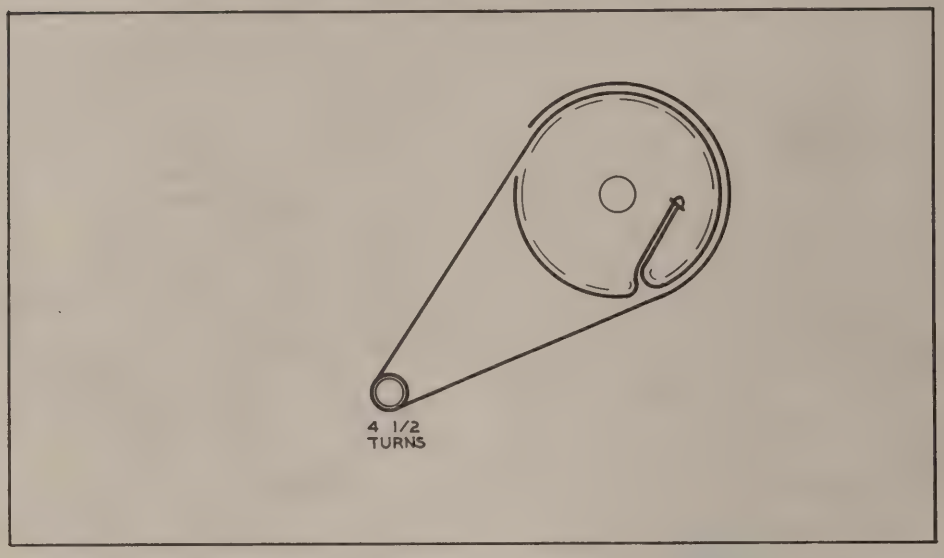
Adjust the horizontal linearity slug (B3) until the picture is symmetrical from left to right.

WAVE TRAP ADJUSTMENT

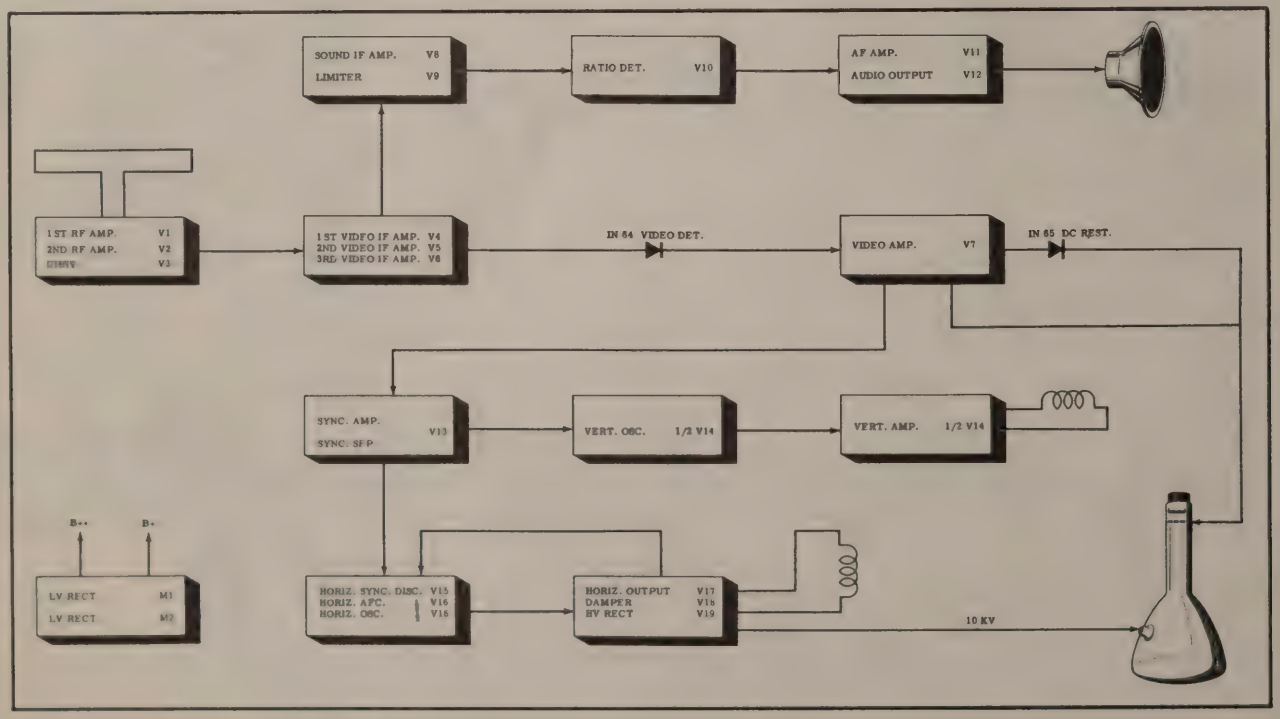
A23 and A24 are high band traps used to eliminate interference from high band television stations when the receiver is tuned to a low band station. These traps are pre-set at the factory to reject interference to channel 5 from channel 11. If interference is encountered, adjust A23 and A24 alternately until the interference is minimized.

DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs.
2. Remove two phillips head screws and two screws on bottom holding front cover. Remove cover.
3. Remove four screws holding chassis from bottom. Remove chassis.



FINE TUNING DIAL CORD STRINGING



BLOCK DIAGRAM

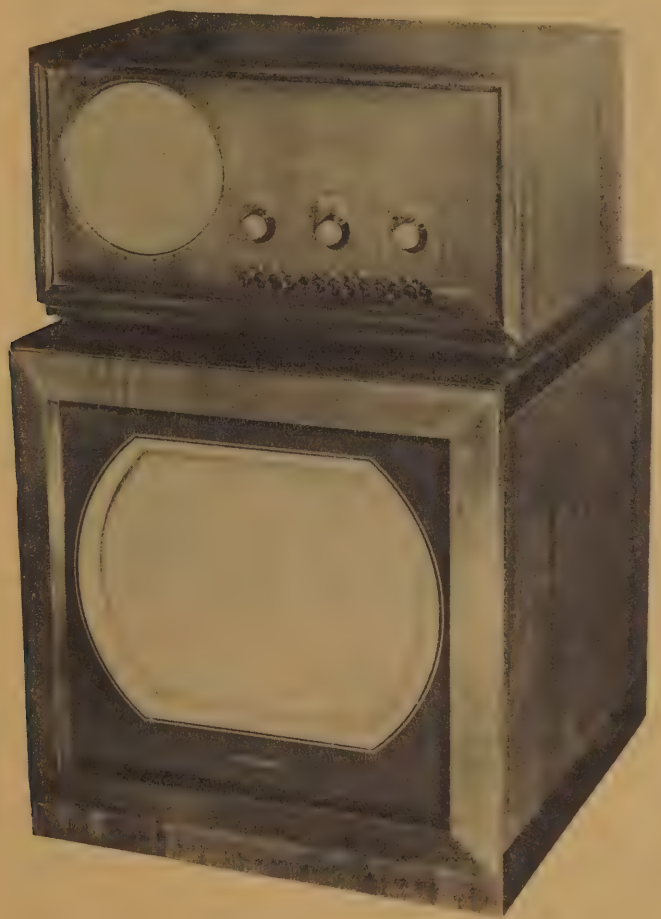
PHOTOFACT* Folder

HALLICRAFTERS MODEL
511

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

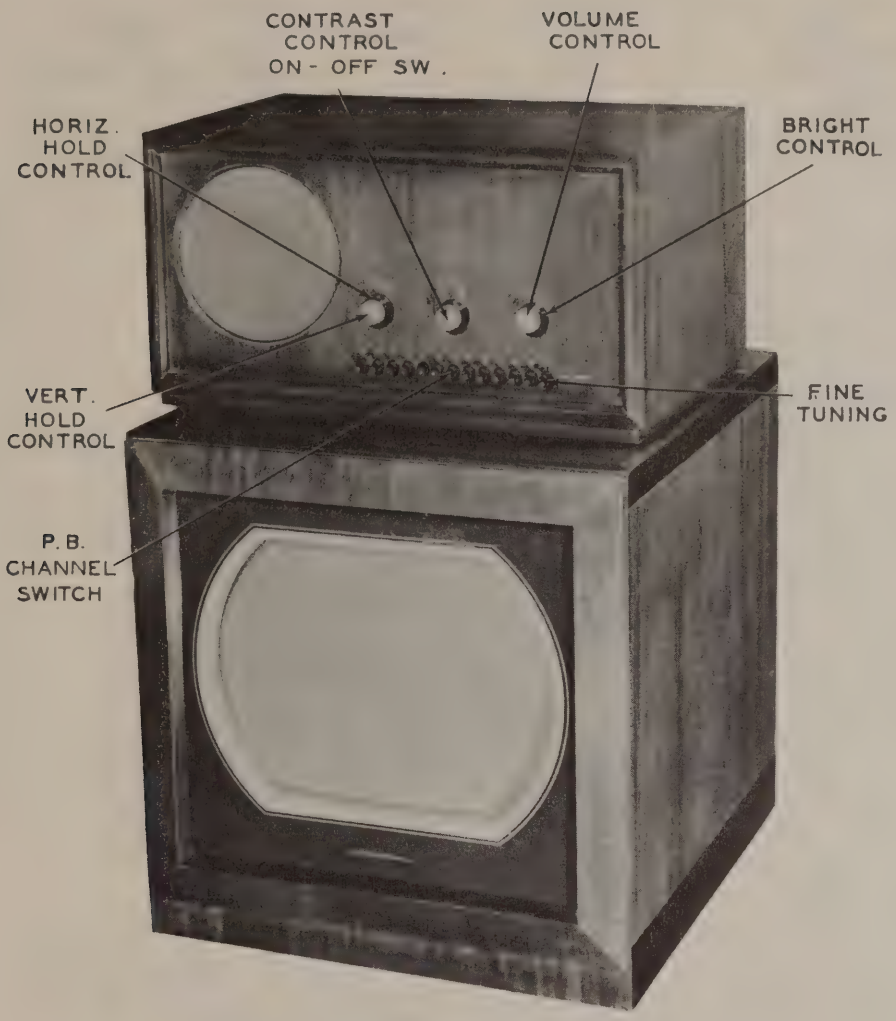


HALLICRAFTERS MODEL
511

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

Date 5/50 Set No. 96—Folder No. 5



HALLICRAFTERS MODEL 511

TRADE NAME	Hallicrafters, Model 511
MANUFACTURER	The Hallicrafters Co., Fifth and Kostner Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty Four
POWER SUPPLY	105-125 Volts AC-60 Cycles
RATING	2 Amp. at 117 Volts AC
TUNING RANGE	Channels 2 thru 13

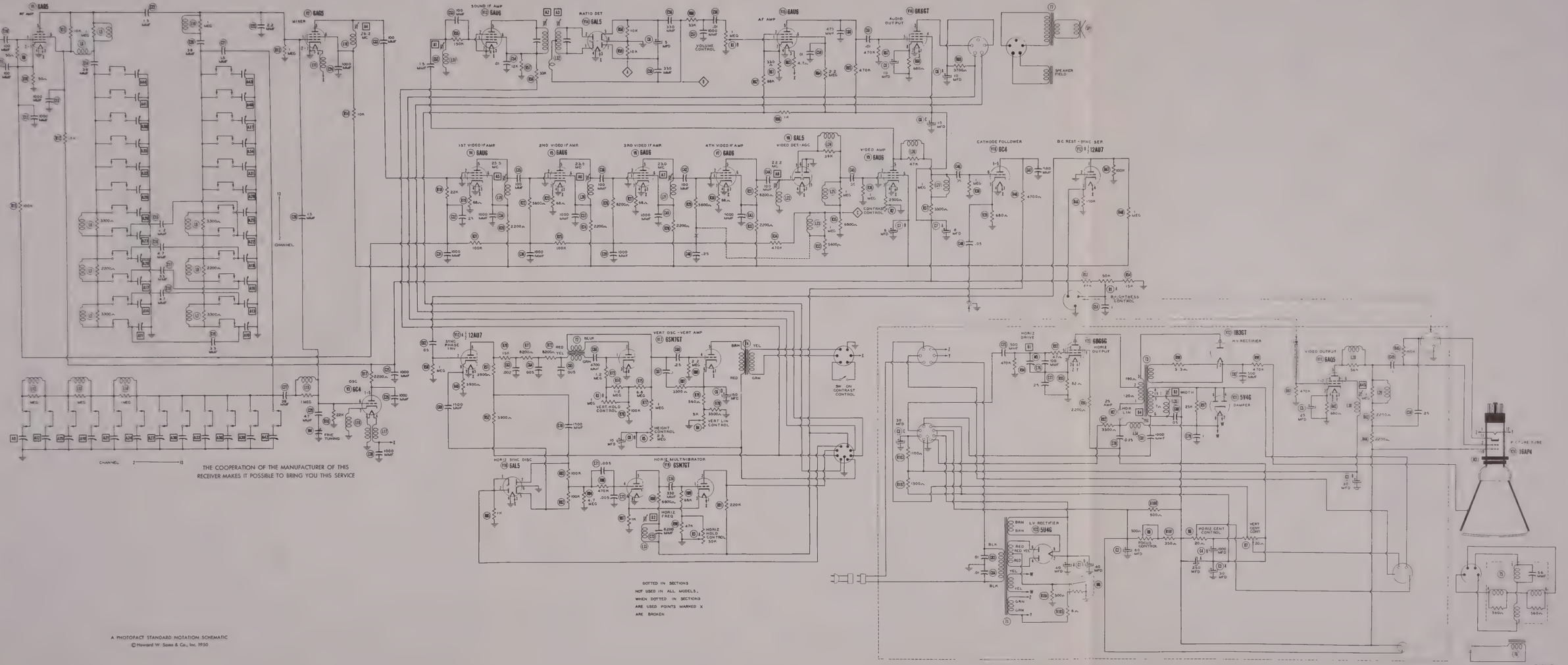
INDEX

Alignment Instructions 6, 7
Block Diagram 19
Disassembly Instructions 13
Horiz. Sweep Circuit Adjustment 13
Parts List and Description 14, 15, 16
Photographs
Cabinet-Rear View 13
Capacitor Identification 11, 18
Chassis-Top View 3
Photographs (continued)
Power Supply Chassis 10
RF Alignment Points 7
Resistor Identification 12, 17
Trans., Inductor and Alignment Identification 4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

HALLICRAFTERS
MODEL 511

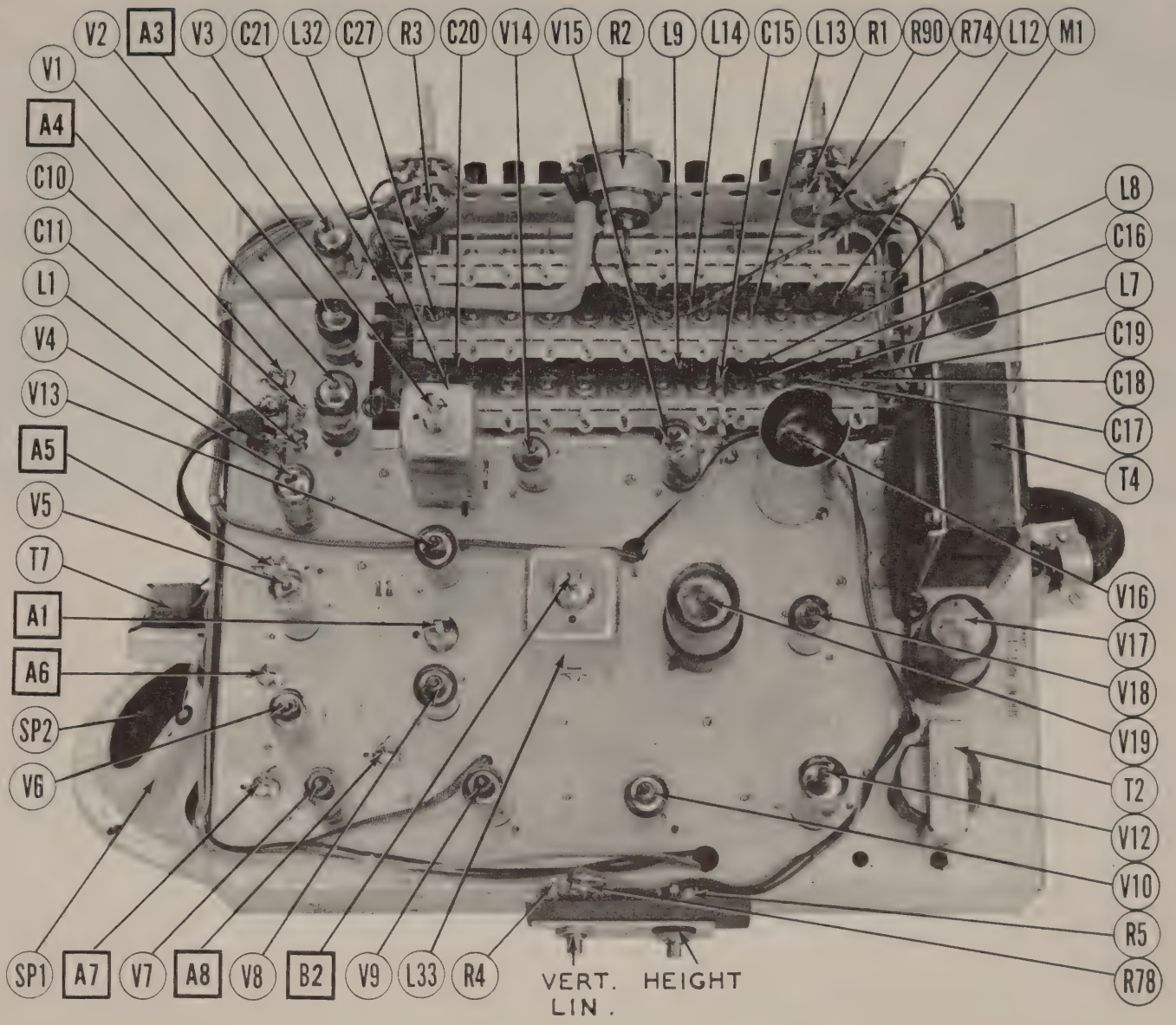


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

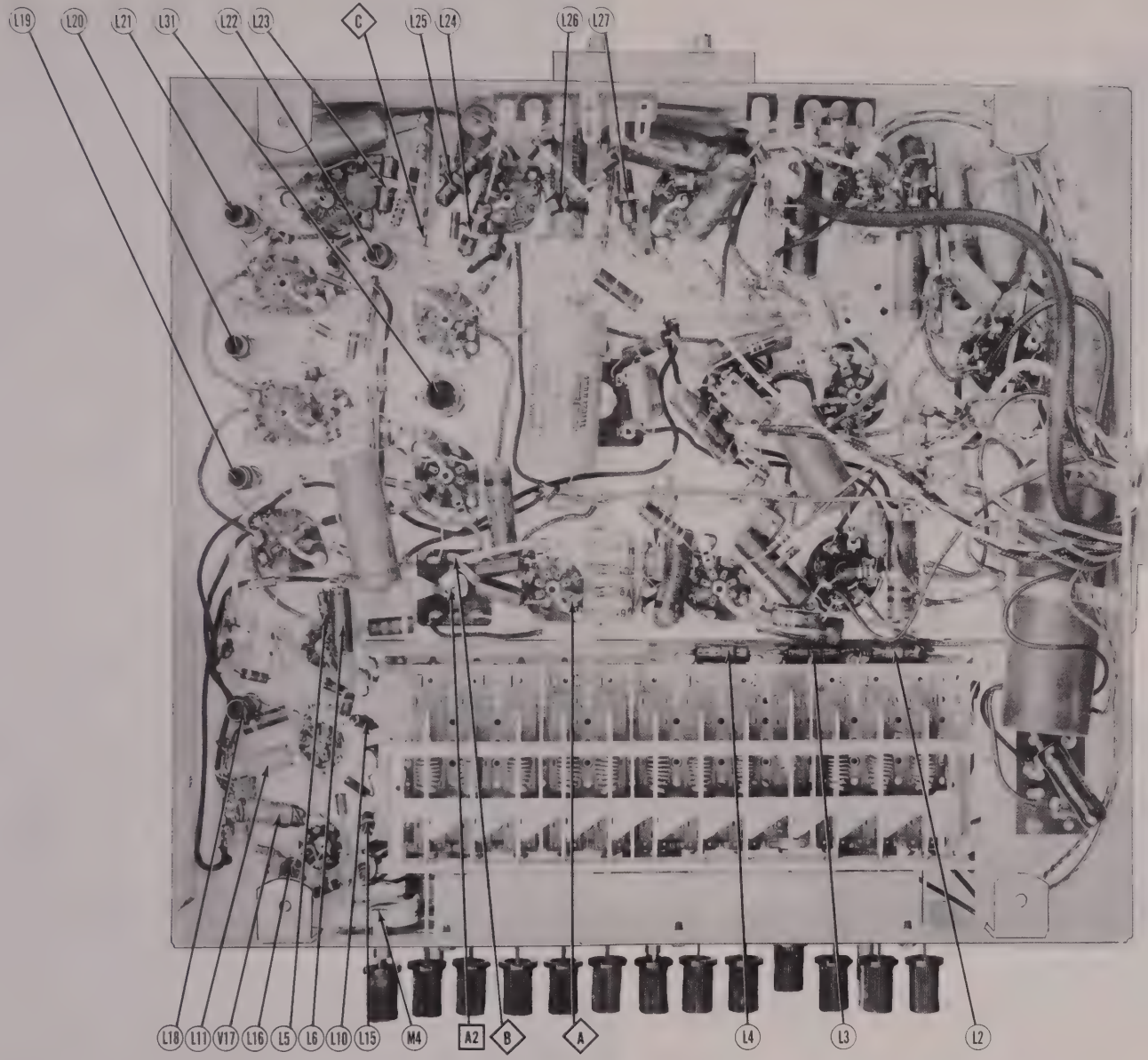
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1950

HALLICRAFTERS
MODEL 511

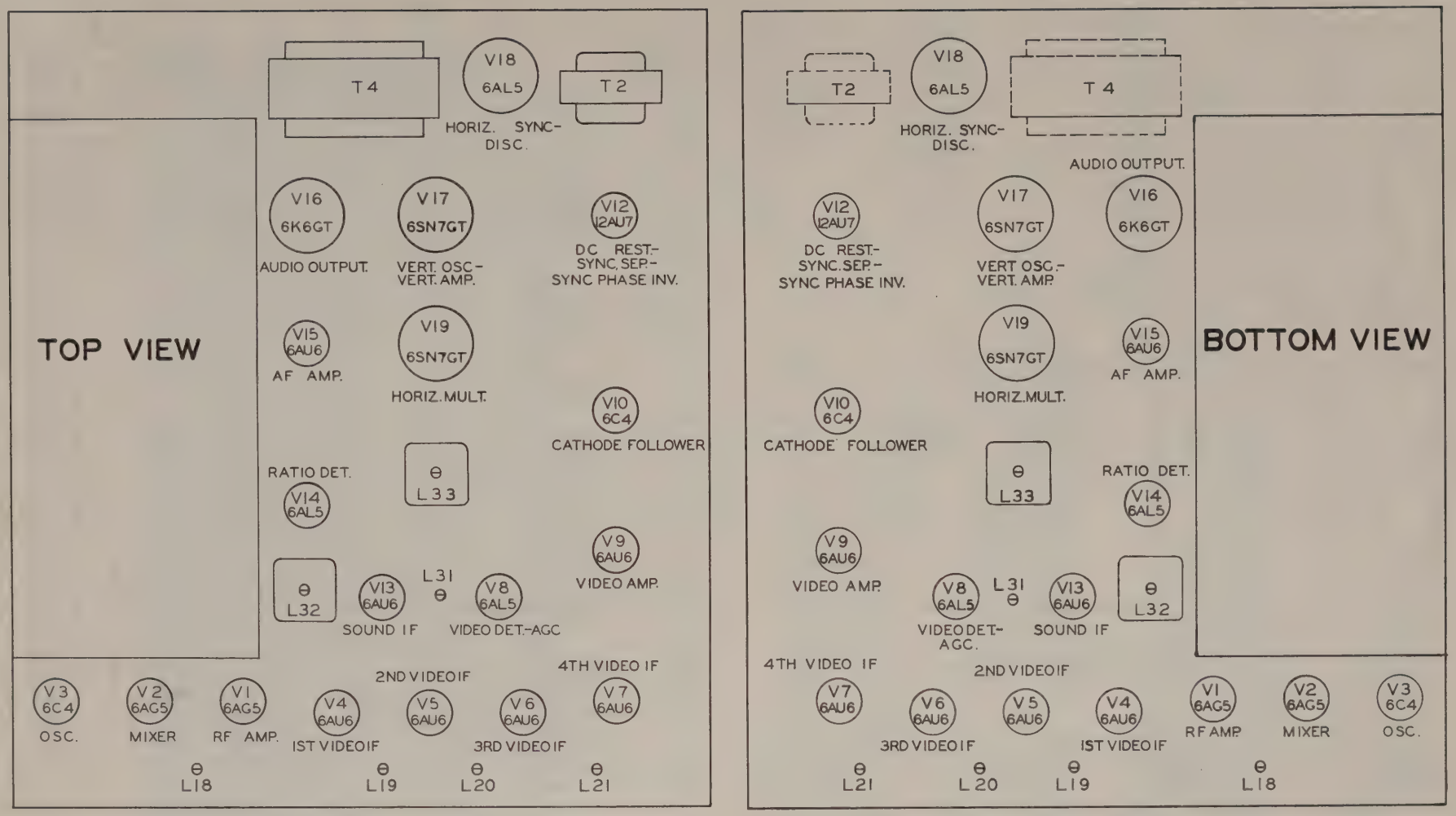
96-5



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	5000MMF	High side to pin 1 (Grid) 6AU6 (V9). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to pin 7 6AL5 (V14) point (A). Common lead to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to give approximately 1 volt reading on VTVM.
2.	5000MMF	"	"	"	DC Probe to point (B). Common to chassis.	A3	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

Shift the frequency of the signal generator either side of 4.5MC and slightly readjust A2 for approximately equal peaks. For best results, use only enough signal generator output to give one volt peaks. Retouch A3 for null point.

VIDEO IF ALIGNMENT

Remove oscillator tube V3 (6C4) before aligning the IF coils to prevent any possible spurious beats which might give improper alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	Two 150Ω carbon res.	Insert resistor in each generator lead and connect across antenna terminal.	26.2MC 25.5MC 23.5MC 23.0MC 22.2MC 26.2MC	2 " " " " "	DC Probe to Point (C). Common to chassis.	A4 A5 A6 A7 A8 A4	Adjust the five IF coils at their listed frequencies for maximum deflection keeping signal generator level at such a point to maintain approximately a two volt reading on VTVM. Repeak A4 at 26.2MC with a signal generator attenuated to give 1 volt reading on VTVM.

Tune the signal generator from 21MC thru 26.25MC, attenuated to give a 1 1/2 volt reading on VTVM at the peaks. Plot IF Response curve. Check reading at 21.75MC, 26.25MC, and the dip between peaks. See figure 1 for correct response curve.

OVERALL VIDEO IF RESPONSE CHECK

Connect synchronized sweep voltage from signal generator to horizontal amplifier in scope to obtain horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	5000MMF	High side to pin 1 (Grid) of 6AG5 (V2). Low side to chassis.	24MC (10MC SWP)	21.75MC 26.25MC	2	Vert. Amp. to point (C). Low side to chassis.		If necessary, slightly retouch A4, A5, A6, A7 and A8 to obtain pattern similar to figure 1. Check to see that markers fall at proper points.

RF ALIGNMENT

The local oscillator operates 24.5MC above the center frequency of each TV channel. To set the local oscillator a separate "BFO" generator set at 24.5MC is used to obtain a zero beat with this difference frequency.

Couple the "BFO" generator to the receiver by connecting the output lead to a coil of hookup wire wrapped around the video detector tube (V8). Set the fine tuning control to the center of its capacity range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	BFO GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	Two 150Ω carbon res.	Across antenna terminals with 150Ω resistor in each generator lead.	57MC	24.5MC	2	DC Probe to Point (C). Common to chassis.	A9	Connect a .01MFD capacitor between pin 2 (Grid) of the picture tube and pin 1 (Grid) of 6AU6 audio Amp. (V15). Adjust A9 for rough audio beat in speaker. Disconnect the .01MFD capacitor.
6.	"	"	"	Off	"	"	A10, A11	Adjust for maximum deflection.
7.	"	"	63MC	24.5MC	3	"	A12	Reconnect .01MFD capacitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.
8.	"	"	"	Off	"	"	A13, A14	Adjust for maximum deflection.
9.	"	"	69MC	24.5MC	4	"	A15	Reconnect .01MFD capacitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.
10.	"	"	"	Off	"	"	A16, A17	Adjust for maximum deflection.
11.	"	"	79MC	24.5MC	5	"	A18	Reconnect .01MFD capacitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.
12.	"	"	"	Off	"	"	A19, A20	Adjust for maximum deflection.
13.	"	"	85MC	24.5MC	6	"	A21	Reconnect .01MFD capacitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.
14.	"	"	"	Off	"	"	A22, A23	Adjust for maximum deflection.
15.	"	"	177MC	24.5MC	7	"	A24	Reconnect .01MFD capacitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.
16.	"	"	"	Off	"	"	A25, A26	Adjust for maximum deflection.
17.	"	"	183MC	24.5MC	8	"	A27	Reconnect .01MFD capacitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.
18.	"	"	"	Off	"	"	A28, A29	Adjust for maximum deflection.
19.	"	"	189MC	24.5MC	9	"	A30	Reconnect .01MFD capacitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.
20.	"	"	"	Off	"	"	A31, A32	Adjust for maximum deflection.
21.	"	"	195MC	24.5MC	10	"	A33	Reconnect .01MFD capacitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.

ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT (CONT.)

22.	"	"	"	Off	"	"	A34, A35	Adjust for maximum deflection.
23.	"	"	201MC	24.5MC	11	"	A36	Reconnect .01MFD capacitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.
24.	"	"	"	Off	"	"	A37, A38	Adjust for maximum deflection.
25.	"	"	207MC	24.5MC	12	"	A39	Reconnect .01MFD capacitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.
26.	"	"	"	Off	"	"	A40, A41	Adjust for maximum deflection.
27.	"	"	213MC	24.5MC	13	"	A42	Reconnect .01MFD capcitor as in step 5 and adjust for rough audio beat. Remove .01MFD capacitor.
28.	"	"	"	Off	"	"	A43, A44	Adjust for maximum deflection.
After completion of alignment, tune in a TV station and adjust A45 for maximum vertical wedge definition.								

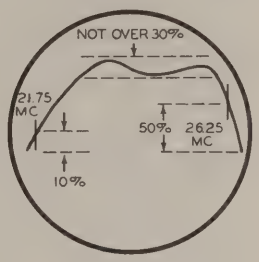
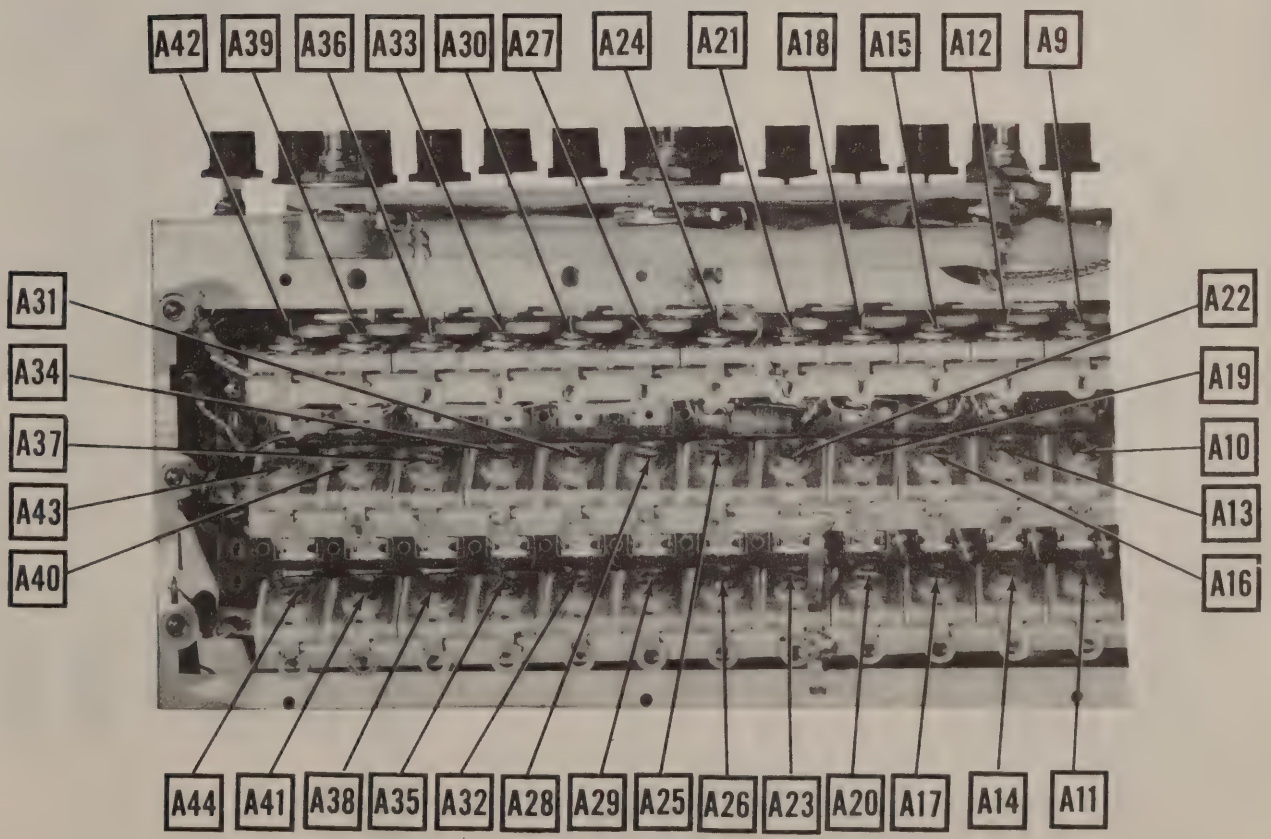


FIG.1



RF AND OSCILLATOR ALIGNMENT POINTS

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.2VDC	.8VDC	6.3VAC	0V.	200VDC	110VDC	.8VDC		
V 2	6AG5	-.8VDC	0V.	0V.	6.3VAC	95VDC	95VDC	0V.		
V 3	6C4	160VDC	0V.	0V.	6.3VAC	160VDC	§-.1VDC	.1VDC		
V 4	6AU6	-1.2VDC	0V.	6.3VAC	0V.	145VDC	145VDC	.5VDC		
V 5	6AU6	-.4VDC	0V.	6.3VAC	0V.	145VDC	145VDC	.8VDC		
V 6	6AU6	-.2VDC	0V.	6.3VAC	0V.	175VDC	145VDC	.8VDC		
V 7	6AU6	-1.7VDC	0V.	6.3VAC	0V.	160VDC	145VDC	.5VDC		
V 8	6AL5	0V.	0V.	6.3VAC	0V.	0V.	0V.	-3.7VDC		
V 9	6AU6	0V.	0V.	6.3VAC	0V.	195VDC	170VDC	4VDC		
V 10	6C4	300VDC	0V.	6.3VAC	0V.	300VDC	0V.	8.2VDC		
V 11	6AQ5	0V.	0V.	6.3VAC	0V.	360VDC	230VDC	0V.		
V 12	12AU7	14VDC	0V.	1.4VDC	6.3VAC	6.3VAC	155VDC	0V.	8VDC	0V.
V 13	6AU6	-.7VDC	0V.	6.3VAC	0V.	29VDC	29VDC	0V.		
V 14	6AL5	0V.	0V.	6.3VAC	0V.	.2VDC	0V.	-.3VDC		
V 15	6AU6	0V.	0V.	6.3VAC	0V.	120VDC	38VDC	1 VDC		
V 16	6K6GT	0V.	0V.	320VDC	230VDC	0V.	0V.	6.3VAC	18VDC	
V 17	6SN7GT	-1.5VDC	36VDC 15VDC	0V.	0V.	385VDC	10VDC 16VDC	6.3VAC	0V.	
V 18	6AL5	0V.	0V.	6.3VAC	0V.	3.8VDC	0V.	-6.5VDC		
V 19	6SN7GT	-6.5VDC	120VDC	9.3VDC	-.5VDC	300VDC	9.3VDC	6.3VAC	0V.	
V 20	6BG6G	0V.	0V.	7.1VDC	0V.	-14VDC	0V.	6.3VAC	340VDC	TOP CAP *
V 21	5V4G	0V.	450VDC	0V.	360VDC	0V.	360VDC	0V.	450VDC	
V 22	1B3GT	* DO NOT MEASURE.								
V 23	5U4G	0V.	400VDC	420VDC	400VAC	6.3VAC	400VAC	380VAC	400VDC	
V 24	16AP4	0V.	.9VDC	PIN 10 350VDC	PIN 11 90VDC	PIN 12 6.3VAC				

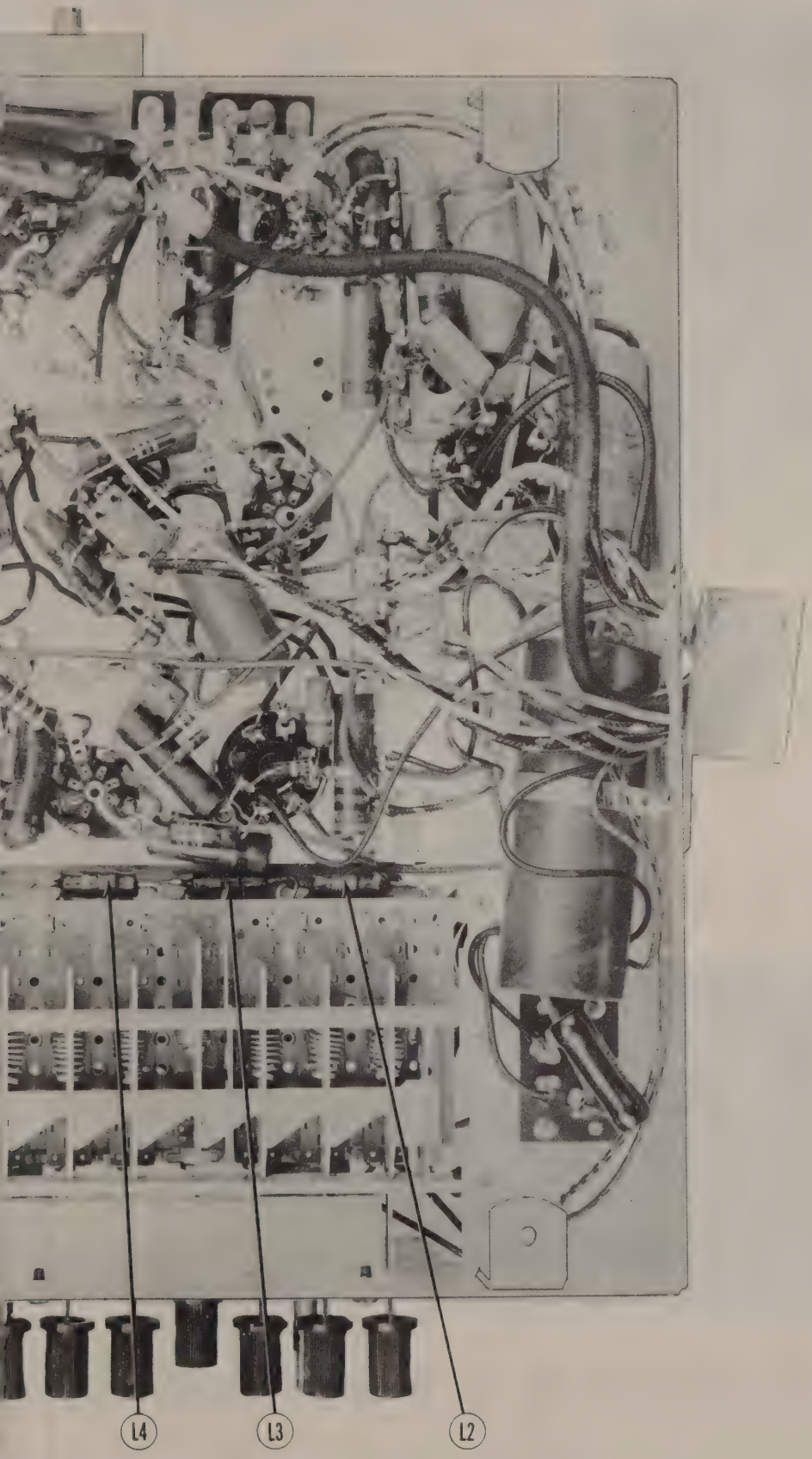
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.

RESISTANCE READINGS

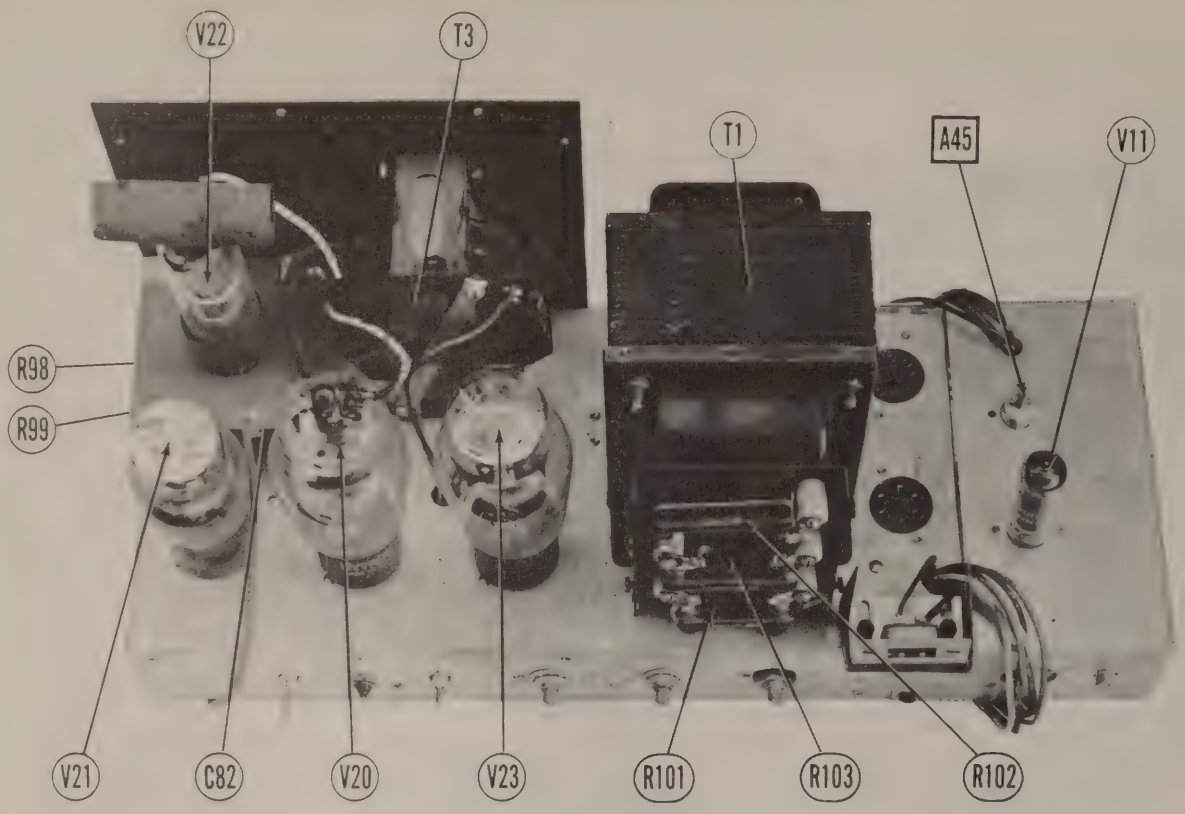
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	700KΩ	150Ω	.1Ω	0Ω	†18KΩ	†18KΩ	150Ω		
V 2	6AG5	1 Meg.	0Ω	0Ω	.2Ω	†12KΩ	†12KΩ	0Ω		
V 3	6C4	†4KΩ	Inf.	.1Ω	.2Ω	†4KΩ	22KΩ	2.5Ω		
V 4	6AU6	620KΩ	0Ω	.1Ω	0Ω	†4KΩ	†4KΩ	68Ω		
V 5	6AU6	510KΩ	0Ω	.1Ω	0Ω	†4KΩ	†4KΩ	68Ω		
V 6	6AU6	400KΩ	0Ω	.1Ω	0Ω	†4KΩ	†4KΩ	68Ω		
V 7	6AU6	400KΩ	0Ω	.1Ω	0Ω	†12KΩ	†4KΩ	68Ω		
V 8	6AL5	.1Ω	0Ω	.1Ω	0Ω	Inf.	0Ω	3000Ω		
V 9	6AU6	1 Meg.	0Ω	.1Ω	0Ω	†6KΩ	†2.5KΩ	2.5KΩ		
V 10	6C4	†5.5KΩ	0Ω	.1Ω	0Ω	†5.5KΩ	1 Meg.	680Ω		
V 11	6AQ5	470KΩ	680Ω	.1Ω	0Ω	†4.4KΩ	†1.4KΩ	470KΩ		
V 12	12AU7	†90KΩ	0Ω	100KΩ	.1Ω	.1Ω	†10KΩ	1 Meg.	3.9KΩ	0Ω
V 13	6AU6	150KΩ	0Ω	.1Ω	0Ω	11KΩ	11KΩ	0Ω		
V 14	6AL5	Inf.	Inf.	.1Ω	0Ω	10KΩ	0Ω	10KΩ		
V 15	6AU6	15Ω	330Ω	2Ω	0Ω	†380KΩ	†2.2 Meg.	330Ω		
V 16	6K6GT	0Ω	0Ω	†4KΩ	†1.4KΩ	470KΩ	Inf.	.1Ω	680Ω	
V 17	6SN7GT	2 Meg.	†800KΩ †1.8 Meg.	0Ω	2.2 Meg.	†30KΩ	2.5KΩ 560Ω	.1Ω	0Ω	
V 18	6AL5	1000Ω	1000Ω	.1Ω	0Ω	4.8 Meg.	0Ω	4.8 Meg.		
V 19	6SN7GT	95KΩ	†250KΩ	1000Ω	5.8 Meg.	†7KΩ	1000Ω	.1Ω	0Ω	
V 20	6BG6G	Inf.	0Ω	82Ω	Inf.	470KΩ	Inf.	.1Ω	†2.3KΩ	TOP CAP †25KΩ
V 21	5V4G	Inf.	†25KΩ	Inf.	†200Ω	Inf.	†200Ω	Inf.	†25KΩ	
V 22	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †25KΩ
V 23	5U4G	Inf.	300KΩ	240Ω	500Ω	0Ω	500Ω	42Ω	300KΩ	
V 24	16AP4	0Ω	200KΩ	PIN 10 †240Ω	PIN 11 36KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 8 OF V23.

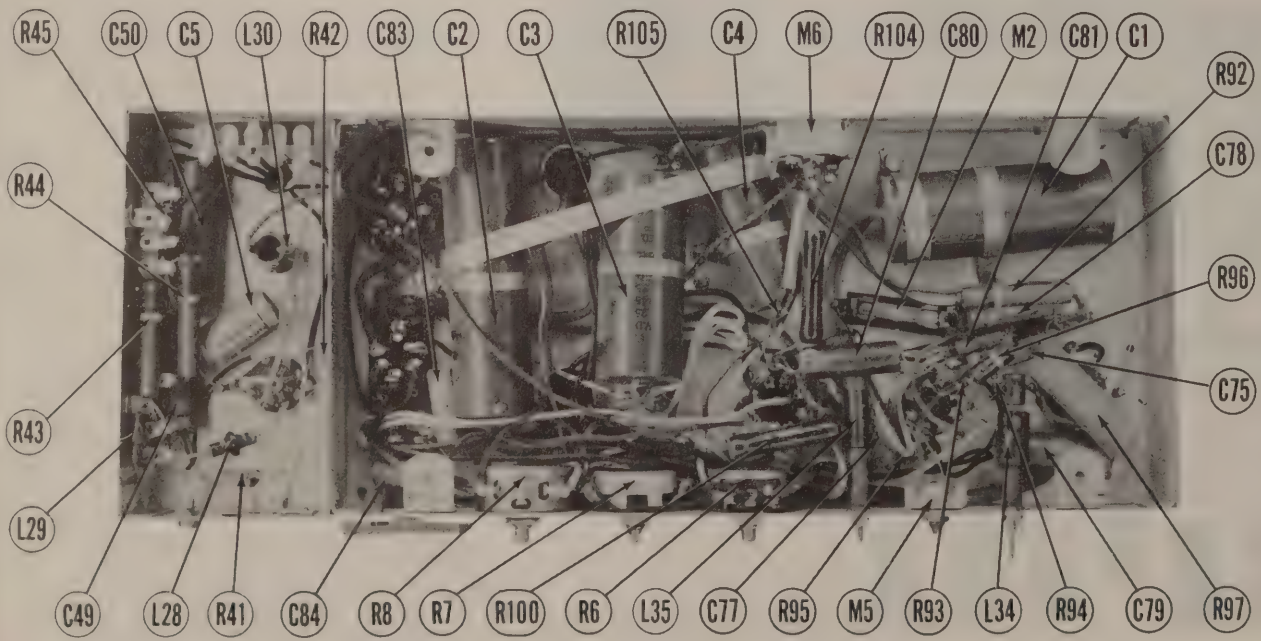
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



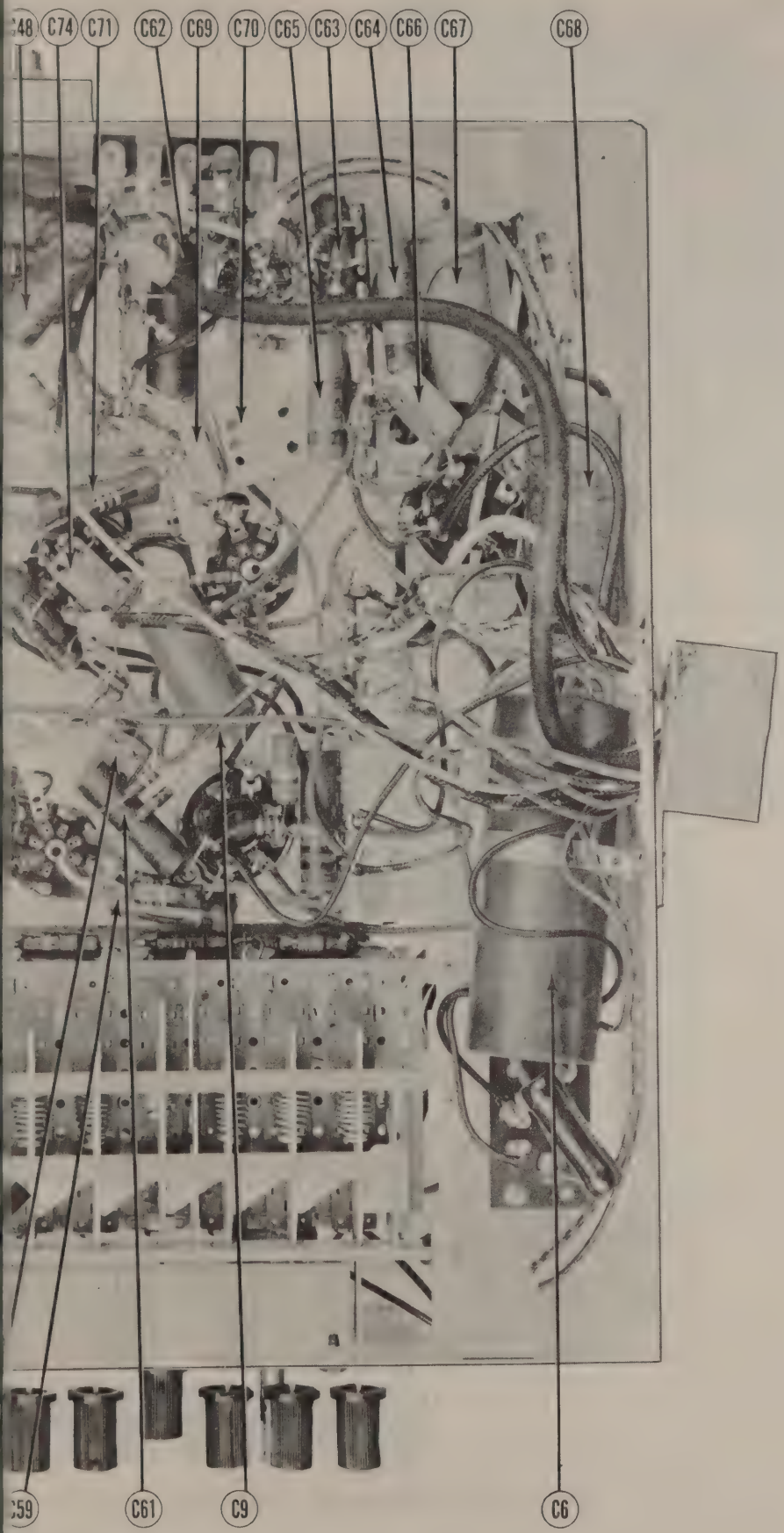
TOR AND ALIGNMENT IDENTIFICATION



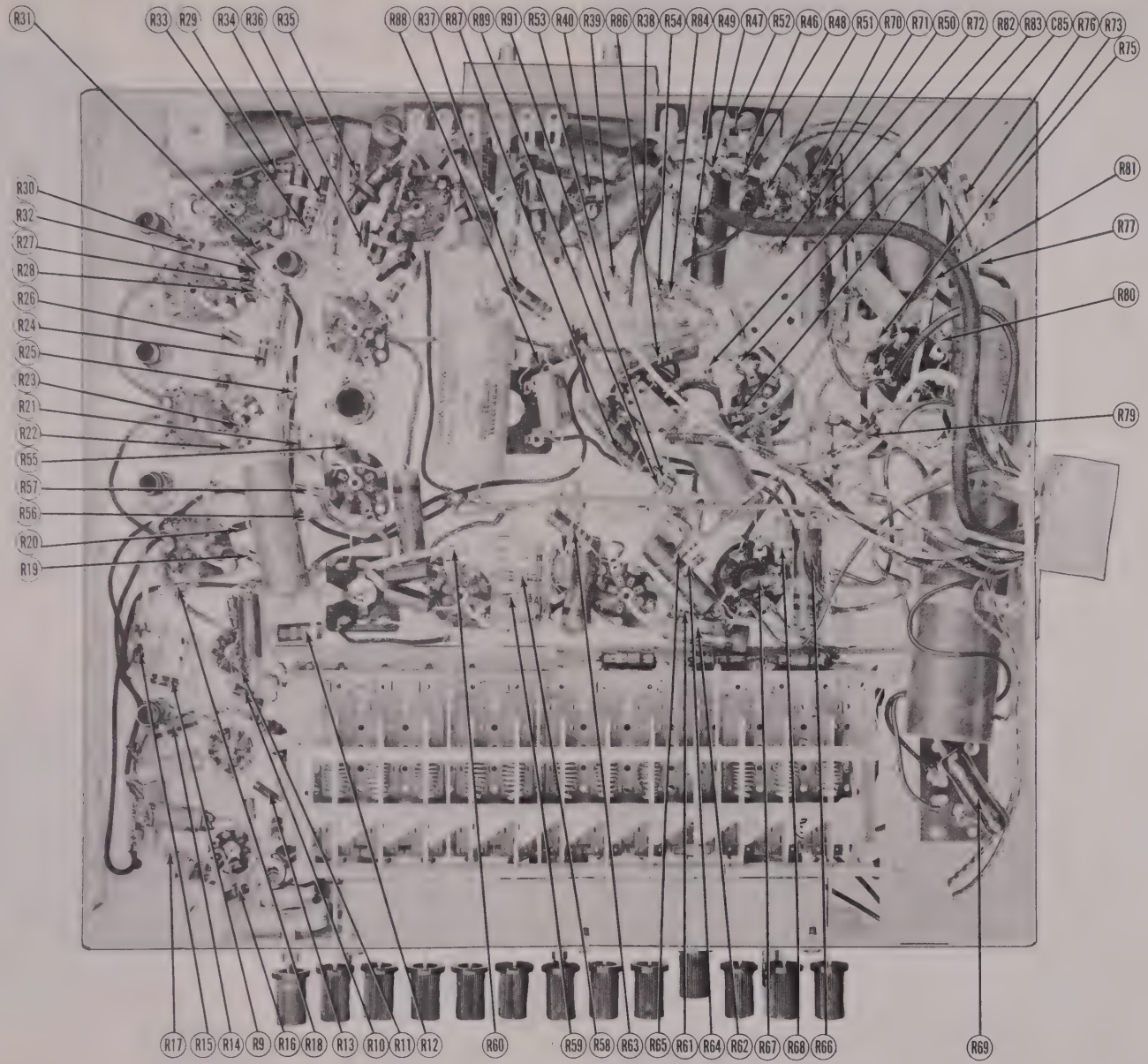
POWER SUPPLY CHASSIS-TOP VIEW



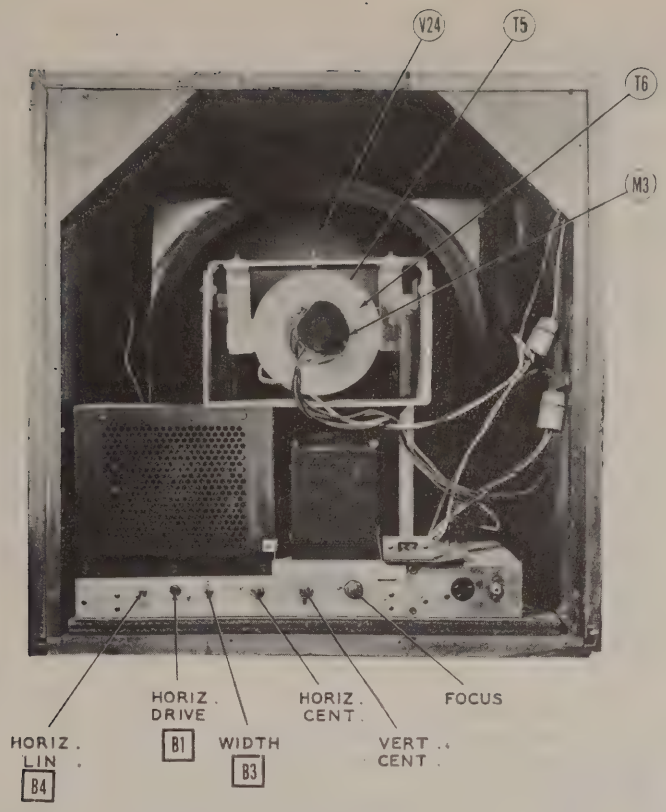
POWER SUPPLY CHASSIS-BOTTOM VIEW



PACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



PICTURE TUBE CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the horizontal drive adjustment (B1) clockwise as far as possible without crowding the right hand side of the test pattern. Insufficient horizontal drive will cause the raster to fall short of filling the mask horizontally.

   If it is not possible to "hold" the test pattern horizontally by adjustment of the horizontal hold control, set the horizontal hold control at the midpoint of its rotation and adjust the horizontal oscillator adjustment screw (B2) until picture "sync" horizontally.
2. Adjust the horizontal centering control and the width adjustment (B3) until test pattern fills the mask properly in the horizontal plane.
3. Set the horizontal linearity adjustment (B4) so the test pattern is symmetrical from left to right. Slight readjustment of the horizontal drive trimmer (B1) may be necessary when making this adjustment.

DISASSEMBLY INSTRUCTIONS

RECEIVER CHASSIS

1. Remove five push-on type control knobs from front of cabinet.
2. Remove fourteen screws holding rear cover. Remove cover.
3. Disconnect speaker plug at chassis connection.
4. Remove four screws holding chassis at bottom. Remove chassis.
5. Remove four 11/32" hex nuts holding speaker. Remove speaker from cabinet.

SWEEP AND POWER SUPPLY CHASSIS

1. Remove fourteen screws holding rear cover. Remove cover.
2. Remove four large screws holding mounting board. Slide assembly out of cabinet.
3. Disconnect yoke deflection plugs and picture tube HV lead.
4. Remove four screws holding power supply chassis. Remove chassis.

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amp.	6AG5	6AG5	7BD	
B	RF Amp.	6AK5	6AK5	7BD	
V2A	Mixer	6AG5	6AG5	7BD	
B	Mixer	6AK5	6AK5	7BD	
V3	Oscillator	6C4	6C4	6BG	
V4	1st Video IF	6AU6	6AU6	7BK	
V5	2nd Video IF	6AU6	6AU6	7BK	
V6	3rd Video IF	6AU6	6AU6	7BK	
V7	4th Video IF	6AU6	6AU6	7BK	
V8	Video Det. -AGC	6AL5	6AL5	6BT	
V9	Video Amp.	6AU6	6AU6	7BK	
V10	Cathode Follower	6C4	6C4	6BG	
V11	Video Output	6AQ5	6AQ5	7BZ	
V12A	DC Rest. -Sync. Sep. -Sync. Phase Inv.	12AU7	12AU7	9A	
B	DC Rest. -Sync. Sep. -Sync. Phase Inv.	6SN7GT	6SN7GT	8BD	
V13	Sound IF Amp.	6AU6	6AU6	7BK	
V14	Ratio Det.	6AL5	6AL5	6BT	
V15	AF Amp.	6AU6	6AU6	7BK	
V16	Audio Output	6K6GT	6K6GT	7S	
V17	Vert. Osc. -Vert. Amp.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Sync. Disc.	6AL5	6AL5	6BT	
V19	Hor. Mult.	6SN7GT	6SN7GT	8BD	
V20	Hor. Output	6BG6G	6BG6G	5BT	
V21	Damper	5V4G	5V4G	5L	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	LV Rectifier	5U4G	5U4G	5T	
V24	Picture Tube	16AP4	16AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	45B137	PRSA450/40-40			TVL-64 #	Filter-Red
B	40	450						Filter-Red
C2	80	450	45B136	PRSA450/40-40			TVL-9 #	Filter
C3A	30	450	45B154	PRSA450/30-30				Filter-Red
B	30	350		PRS250/40				Filter-Yellow
C	30	250						Filter-Blue
C4A	250	10	45B134	PRS12/250			TVL-66 #	Hor. Cent. Cont. Bypass-Red
B	1000	6		PRS6/1000				Vert. Cent. Cont. Bypass-Yellow
C5	25	50	45A096	PRS50/25			TVA-15	V. Output Cathode Bypass
C6A	10	450	45B135	AF222J #			D13422	Output Plate Decoupling-Red
B	10	450		PRS50/100				Decoupling-Red
C	10	450						Decoupling-Blue
D	150	50						Vert. Output Cath. Byp. -Yellow
C7A	8	475	45B139	PRS450/8-8			TVA-25	Decoupling
B	8	475						Decoupling
C8	5	50	45A109	PRS150/4			TVA-13	Stabilizing Cap.
C9	10	25	45A121	PRS25/10			TVA-5	Output Cathode Bypass
C10	100		47B20101K5	GP100K	D6-101	GP1K-100		RF Coupling
C11	100		47B20101K5	GP100K	D6-101	GP1K-100		RF Coupling
C12	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C13	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	RF Decoupling
C14	39		47B20390K5	GP39K	D6-390	GP1K-39		RF Coupling
C15	2.2		47A160-4	CN2.2CNPO	D2-2.2			RF Coupling
C16	4.7		47A160-6	CN4.7DNPO	D2-4.7	NPOK-4.7		RF Coupling
C17	3.3		47A160-5	CN3.3DNPO	D2-3.3	NPOK-3.3		RF Coupling
C18	4.7		47A160-6	CN4.7DNPO	D2-4.7	NPOK-4.7		RF Coupling
C19	3.3		47A160-5	CN3.3DNPO	D2-3.3	NPOK-3.3		RF Coupling
C20	39		47B20390K5	GP39K	D6-390	GP1K-39		RF Coupling
C21	1.5		47A160-3	CN1.5CNPO	D2-1.5	NPOK-1.5		Osc. Coupling
C22	1.5		47A160-3	CN1.5CNPO	D2-1.5	NPOK-1.5		RF Coupling
C23	2.2		47A160-4	CN2.2CNPO	D2-2.2			Fixed Trimmer †
C24	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	Mixer Decoupling
C25	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	RF Bypass
C26	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	Osc. Plate Bypass
C27	39		47B20390K5	GP39K	D6-390	GP1K-39		Osc. Grid Cap.
C28	1.5		47A160-3	CN1.5CNPO	D2-1.5	NPOK-1.5		Osc. Coupling
C29	4.7		47A160-6	CN4.7DNPO	D2-4.7	NPOK-4.7		Fixed Trimmer
C30	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	Filament Bypass
C31	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C32	.25	200	46AT254J	P488-25			TC-2	AGC Filter
C33	100		47B20101K5	GP100K	D6-101	GP1K-100	1FM-31	IF Coupling
C34	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	1st V. IF Decoupling
C35	100		47B20101K5	GP100K	D6-101	GP1K-100	1FM-31	IF Coupling
C36	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C37	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	2nd V. IF Decoupling
C38	100		47B20101K5	GP100K	D6-101	GP1K-100	1FM-31	IF Coupling
C39	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C40	.25	200	46AT254J	P488-25			TC-2	AGC Filter
C41	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	3rd V. IF Decoupling
C42	100		47B20101K5	GP100K	D6-101	GP1K-100	1FM-31	IF Coupling
C43	5000		47A168	BPD-5	D6-502	811-005	29C1	4th V. IF Decoupling
C44	100		47B20101K5	GP100Kq	D6-101	GP1K-100	1FM-31	IF Coupling
C45	.05	200	46AU503J	P288-05			TM-15	Video Coupling
C46	.05	600	46AY503J	P688-05			TM-15	Video Coupling
C47	560	500	47X20A561K	1468-0005	D6-561	GP2K-560	1FM-35	Cath. Follower Plate Bypass
C48	.05	200	46AU503J	P288-05			TM-15	Video Coupling
C49	.1	600	46AY104J	P688-1			TM-1	Video Coupling
C50	.25	600	46AX254J	684-25			TC-2	Video Coupling
C51	.1	200	46AU104J	P288-1			TM-1	Pic. Tube Cath. Bypass
C52	1.5		47A160-3	CN1.5CNPO	D2-1.5	NPOK-1.5		S. IF Coupling
C53	100		47B20101K5	GP100K	D6-101	GP1K-100	1FM-31	S. IF Coupling

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALA PART No.
C54	.01	400	46AU103J	P488-01	D6-103
C55	330	500	47B20A331K5	1468-00035	D6-331
C56	330	500	47B20A331K5	1468-00035	D6-331
C57	1000		47B20A102N5	GP1000M	D6-102
C58	.01	400	46AU103J	P488-01	D6-103
C59	.01	600	46AZ103J	P688-01	D6-103
C60	470	500	47X20A471M	1468-0005	D6-471
C61	.01	600	46AZ103J	P688-01	D6-103
C62	.05	600	46AY503J	P688-05	
C63	.002	600	46AZ202J	P688-002	D6-202
C64	.005	600	46AZ502J	P688-005	D6-502
C65	.005	600	46AZ502J	P688-005	D6-502
C66	4700	500	47X35A472K	1467-005	D6-472
C67	.1	600	46AY104J	P688-1	
C68	.25	600	46AX254J	684-25	
C69	1500	500	47X30A152K	1467-0015	D6-152
C70	1500	500	47X30A152K	1467-0015	D6-152
C71	.005	600	46AZ502J	P688-005	D6-502
C72	.005	600	46AZ502J	P688-005	D6-502
C73	6200	500	47X35A622J		
C74	330	500	47X20A331K	1469-00035	D6-331
C75	1500	500	47X20A152K	1467-0015	D6-152
C76	100	500	47X20A101K	1468-0001	D6-101
C77	.25	600	46AX254J	684-25	
C78	.035	600	46AY353J	P688-033	
C79	.1	600	46AY104J	P688-1	
C80	.05	600	46AY503J	P688-05	
C81	1000	500	47X30A122K	1467-001	D6-102
C82	500	20000	47A216		TV2-502
C83	.01	600	46BR103L6	P688-01	D6-103
C84	.01	600	46BR103L6	P688-01	D6-103

* When either items C55 or C56 are replaced, replace both
† Not used in all models.
‡ Used with 6AK5 tube only.
§ Parallel sections to obtain desired capacity.
# Use mounting strap.

CONTR

ITEM No.	RATING: RESIST-ANCE	RATING: WATTS	REPLACEMENT DATA: Hallicrafter PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTA PART No.
R1A	50KΩ	1/2	25B787	B11-123 *	
B	1 Meg.	1/2		B13-137 *	
C	Shaft End			E-202 *	
R2	2500Ω	2	25B789		
R3A	50KΩ	1/2	25B788	B11-123 *	
B	1 Meg.	1/2		B11-137 *	
C	Shaft End			E-202 *	
R4A	5000Ω	1/2	25B769	Q11-114	AM-19-S
B	Shaft		Not Req.	RQ	KSS-3 #
R5A	2.5 Meg.	1/2	25B768	Q11-239	AM-84-S
B	Shaft		Not Req.	RQ	KSS-3 #
R6	20Ω	2	25B707	W-20	43-20
R7	20Ω	2	25B706	W-20 x 10	43-20 CT
R8	500Ω	4	25B709		10-500

* Additional parts to be used with "Concentrikit".
# File slot in shaft to duplicate original.

RESI

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: IRC PART No.
R9	150Ω	1/2	23X20X151K	
R10	150Ω	1	23X20X151K	
R11	10KΩ	1/2	23X20X103K	
R12	15KΩ	1	23X30X153K	
R13	1 Meg. 20%	1/2	23X20X105M	
R14	10KΩ	1	23X30X103K	
R15	100KΩ	1/2	23X20X104K	BTS-100K
R16	22KΩ	1/2	23X20X223K	
R17	2200Ω	1/2	23X20X222K	BTS-2200
R18	22KΩ	1/2	23X20X223K	
R19	68Ω	1/2	23X20X680K	
R20	2200Ω	1/2	23X20X222K	BTS-2200
R21	100KΩ	1/2	23X20X104K	BTS-100K
R22	5600Ω	1/2	23X20X562K	
R23	68Ω	1/2	23X20X680K	
R24	2200Ω	1/2	23X20X222K	BTS-2200
R25	100KΩ	1/2	23X20X104K	BTS-100K
R26	8200Ω	1/2	23X20X822K	
R27	68Ω	1/2	23X20X680K	
R28	2200Ω	1/2	23X20X222K	BTS-2200
R29	5600Ω	1/2	23X20X562K	
R30	68Ω	1/2	23X20X680K	
R31	8200Ω	1/2	23X20X822K	
R32	2200Ω	1/2	23X20X222K	BTS-2200
R33	5600Ω	1/2	23X20X562K	BTS-5600
R34	470KΩ 20%	1/2	23X20X474M	BTS-470K
R35	6800Ω	1/2	23X20X682K	BTS-6800
R36	1 Meg. 20%	1/2	23X20X105M	BTS-1 Meg.
R37	3300Ω	1	23X30X332K	BTA-3300
R38	1 Meg. 20%	1/2	23X20X105M	BTS-1 Meg.
R39	680Ω	1/2	23X20X681K	BTS-680
R40	4700Ω	1	23X30X472K	BTA-4700
R41	470KΩ 20%	1/2	23X20X474M	BTS-470K
R42	680Ω	1/2	23X20X681K	BTS-680
R43	2200Ω	2	23X40X222K	BT-2-2200
R44	2200Ω	2	23X40X222K	BT-2-2200
R45	100KΩ	1/2	23X20X104K	BTS-100K

PARTS LIST AND DESCRIPTIONS (Continued)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amp	6AG5	6AG5	7BD	
B	RF Amp.	6AK5	6AK5	7BD	
V2A	Mixer	6AG5	6AG5	7BD	
B	Mixer	6AK5	6AK5	7BD	
V3	Oscillator	6C4	6C4	6BG	
V4	1st Video IF	6AU6	6AU6	7BK	
V5	2nd Video IF	6AU6	6AU6	7BK	
V6	3rd Video IF	6AU6	6AU6	7BK	
V7	4th Video IF	6AU6	6AU6	7BK	
V8	Video Det.-AGC	6AL5	6AL5	6BT	
V9	Video Amp	6AU6	6AU6	7BK	
V10	Cathode Follower	6C4	6C4	6BG	
V11	Video Output	6AQ5	6AQ5	7BZ	
V12A	DC Rest.-Sync. Sep.-Sync. Phase Inv	12AU7	12AU7	9A	
B	DC Rest.-Sync. Sep. Sync. Phase Inv	6SN7GT	6SN7GT	8BD	
V13	Sound IF Amp.	6AU6	6AU6	7BK	
V14	Ratio Det.	6AL5	6AL5	6BT	
V15	AF Amp.	6AU6	6AU6	7BK	
V16	Audio Output	6K6GT	6K6GT	7S	
V17	Vert. Osc.-Vert. Amp.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Sync. Disc	6AL5	6AL5	6BT	
V19	Hor. Mult.	6SN7GT	6SN7GT	8BD	
V20	Hor. Output	6BG6G	6BG6G	5BT	
V21	Damper	5V4G	5V4G	5L	
V22	HV Rectifier	1B3GT	1B3GT	2C	
V23	LV Rectifier	5U4G	5U4G	5T	
V24	Picture Tube	16AP4	16AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP	RATING: VOLT	HALLICRAFTER PART No	REPLACEMENT DATA: AEROVOX PART No	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: ERIE PART No	REPLACEMENT DATA: SPRAGUE PART No	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	45B137	PRSA450/40-40			TVL-64 #	Filter-Red
B	40	450						Filter-Red
C2	80	450	45B136	PRSA450/40-40			TVL-9 #	Filter
C3A	30	450	45B154	PRSA450/30-30				Filter-Red
B	30	350		PRS250/40				Filter-Yellow
C	30	250						Filter-Blue
C4A	250	10	45B134	PRS12/250			TVL-66 #	Hor. Cent. Cont. Bypass-Red
B	1000	6		PRS6/1000				Vert. Cent. Cont. Bypass-Yellow
C5	25	50	45A096	PRS50/25			TVA-15	V. Output Cathode Bypass
C6A	10	450	45B135	PAP222J #			D13422	Output Plate Decoupling-Red
B	10	450		PRS50/100				Decoupling-Red
C	10	450						Decoupling-Blue
D	150	50						Vert. Output Cath. Byp.-Yellow
C7A	8	475	45B139	PRS450/8-8			TVA-25	Decoupling
B	8	475						Decoupling
C8	5	50	45A108	PRS150/4			TVA-13	Stabilizing Cap.
C9	10	25	45A121	PRS25/10			TVA-5	Output Cathode Bypass
C10	100		47B2010BK5	GP100K	D6-101	GP1K-100		RF Coupling
C11	100		47B2010K5	GP100K	D6-101	GP1K-100		RF Coupling
C12	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C13	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	RF Decoupling
C14	39		47B2039BK5	GP39K	D6-390	GP1K-39		RF Coupling
C15	2.2		47A160-4	CN2.2CNPO	D2-2.2			RF Coupling
C16	4.7		47A160-6	CN4.7DNPO	D2-4.7	NPOK-4.7		RF Coupling
C17	3.3		47A160-5	CN3.3DNPO	D2-3.3	NPOK-3.3		RF Coupling
C18	4.7		47A160-6	CN4.7DNPO	D2-4.7	NPOK-4.7		RF Coupling
C19	3.3		47A160-5	CN3.3DNPO	D2-3.3	NPOK-3.3		RF Coupling
C20	39		47B2039BK5	GP39K	D6-390	GP1K-39		RF Coupling
C21	1.5		47A160-3	CN1.5CNPO	D2-1.5	NPOK-1.5		Osc. Coupling
C22	1.5		47A160-3	CN1.5CNPO	D2-1.5	NPOK-1.5		RF Coupling
C23	2.2		47A160-4	CN2.2CNPO	D2-2.2			Fixed Trimmer †
C24	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	Mixer Decoupling
C25	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	RF Bypass
C26	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	Osc. Plate Bypass
C27	39		47B2039BK5	GP39K	D6-390	GP1K-39		Osc. Grid Cap.
C28	1.5		47A160-3	CN1.5CNPO	D2-1.5	NPOK-1.5		Osc. Coupling
C29	4.7		47A160-6	CN4.7DNPO	D2-4.7	NPOK-4.7		Fixed Trimmer
C30	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	Filament Bypass
C31	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C32	.25	200	46AT254J	P488-25			TC-2	AGC Filter
C33	100		47B2010BK5	GP100K	D6-101	GP1K-100	1FM-31	IF Coupling
C34	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	1st V. IF Decoupling
C35	100		47B2010BK5	GP100K	D6-101	GP1K-100	1FM-31	IF Coupling
C36	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C37	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	2nd V. IF Decoupling
C38	100		47B2010BK5	GP100K	D6-101	GP1K-100	1FM-31	IF Coupling
C39	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C40	.25	200	46AT254J	P488-25			TC-2	AGC Filter
C41	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	3rd V. IF Decoupling
C42	100		47B2010K5	GP100K	D6-101	GP1K-100	1FM-31	IF Coupling
C43	5000		47A168	BPD-5	D6-502	81L-005	39C1	4th V. IF Decoupling
C44	100		47B2010BK5	GP100Kq	D6-101	GP1K-100	1FM-31	IF Coupling
C45	.05	200	46AU503J	P288-05			TM-15	Video Coupling
C46	.05	600	46AY503J	P688-05			TM-15	Video Coupling
C47	560	500	47X20A561K	1468-0005	D6-561	GP2K-560	1FM-35	Cath. Follower Plate Bypass
C48	.05	200	46AU503J	P288-05			TM-15	Video Coupling
C49	.1	600	46AY104J	P688-1			TM-1	Video Coupling
C50	.25	600	46AX254J	684-25			TC-2	Video Coupling
C51	.1	200	46AU104J	P288-1			TM-1	Pic. Tube Cath. Bypass
C52	1.5		47A160-3	CN1.5CNPO	D2-1.5	NPOK-1.5		S. IF Coupling
C53	100		47B2010BK5	GP100K	D6-101	GP1K-100	1FM-31	S. IF Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	HALLICRAFTER PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	.01	400	46AU103J	P488-01	D6-103	821-01	TM-11	S. IF Decoupling
C55	330	500	47B20A331K5	1468-00035	D6-331	GP2K-330	1FM-335	Diode Load Cap. *
C56	330	500	47B20A331K5	1468-00035	D6-331	GP2K-330	1FM-335	Diode Load Cap. *
C57	1000		47B20A102N5	GP1000M	D6-102	GP2L-001	1FM-21	De-emphasis
C58	.01	400	46AU103J	P488-01	D6-103	821-01	TM-11	Audio Coupling
C59	.01	600	46AZ103J	P688-01	D6-103	821-01	TM-11	AF Amp. Screen Bypass
C60	470	500	47X20A471M	1468-0005	D6-471	GP2K-470	1FM-35	AF Amp. Plate Bypass
C61	.01	600	46AZ103J	P688-01	D6-103	821-01	TM-11	Audio Coupling
C62	.05	600	46AY503J	P688-05			TM-15	Sync. Coupling
C63	.002	600	46AZ202J	P688-002	D6-202	GP2M-002	TM-22	Integrator Net.
C64	.005	600	46AZ502J	P688-005	D6-502	GP2M-005	TM-25	Integrator Net.
C65	.005	600	46AZ502J	P688-005	D6-502	GP2M-005	TM-25	Integrator Net.
C66	4700	500	47X35A472K	1467-005	D6-472	GP2M-0047	1FM-25	Vert. Osc. Grid Cap.
C67	.1	600	46AY104J	P688-1			TM-1	Vert. Discharge
C68	.25	600	46AX254J	684-25			TC-2	Vert. Sweep Coupling
C69	1500	500	47X30A152K	1467-0015	D6-152	GP2L-0015	1FM-215	Hor. Sync. Coupling
C70	1500	500	47X30A152K	1467-0015	D6-152	GP2L-0015	1FM-215	Hor. Sync. Coupling
C71	.005	600	46AZ502J	P688-005	D6-502	GP2M-005	TM-25	AFC Filter
C72	.005	600	46AZ502J	P688-005	D6-502	GP2M-005	TM-25	AFC Filter
C73	6200	500	47X35A622J					Fixed Trimmer
C74	330	500	47X20A331K	1469-00035	D6-331	GP2K-330	MS-33	Hor. MV Feedback
C75	1500	500	47X20A152K	1467-0015	D6-152	GP2L-0015	1FM-215	Hor. Sweep Coupling
C76	100	500	47X20A101K	1468-0001	D6-101	GP1K-100	1FM-31	Voltage Divider †
C77	.25	600	46AX254J	684-25			TC-2	Hor. Output Cath. Bypass
C78	.035	600	46AY353J	P688-033				Damper Filter
C79	.1	600	46AY104J	P688-1			TM-1	Damper Filter
C80	.05	600	46AY503J	P688-05			TM-15	Fixed Trimmer †
C81	1000	500	47X30A102K	1467-001	D6-102	GP2L-001	1FM-21	Hor. Feedback
C82	500	20000	47A216		TV2-502			HV Filter
C83	.01	600	46BR103L6	P688-01	D6-103	821-01	TM-11	Line Filter
C84	.01	600	46BR103L6	P688-01	D6-103	821-01	TM-11	Line Filter

* When either items C55 or C56 are replaced, replace both capacitors of equal value.
† Not used in all models.
‡ Used with 6AK5 tube only.
§ Parallel sections to obtain desired capacity.
# Use mounting strap.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Hallicrafter PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	50KΩ	1/2	25B787	B11-123 *		SBB-516	Brightness control-panel
B	1 Meg.	1/2		B13-137 *			Volume control-rear
C	Shaft End			E-202 *			Attach per instructions in "Concentrikit".
R2	2500Ω	2	25B789				Contrast control & switch-Wire Wound
R3A	50KΩ	1/2		B11-123 *			Horiz. hold control-panel
B	1 Meg.	1/2	25B788	B11-137 *		SBB-517	Vert. hold control-rear
C	Shaft End			E-202 *			Attach per instructions in "Concentrikit".
R4A	5000Ω	1/2	25B769	QU-114	AM-19-S	AN-10	Vert. linearity control
B	Shaft		Not Req.	RQ	KSS-3 #	AK-1	Attach to R4A per instructions
R5A	2.5 Meg.	1/2	25B768	QU-239	AM-84-S	AN-83	Height control
B	Shaft		Not Req.	RQ	KSS-3 #	AK-1	Attach to R5A per instructions
R6	20Ω	2	25B707	W-20	43-20	V-110	Horiz. centering control-Wire Wound
R7	30Ω	2	25B706	W-30 x 10	43-20 CT		Vert. centering control-Wire Wound-tapped ⑤ 10Ω
R8	500Ω	4	25B709		10-500		Focus control-Wire Wound

* Additional parts to be used with "Concentrikit".
# File slot in shaft to duplicate original.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R9	150Ω	1/2	23X20X151K		RF Grid
R10	150Ω	1/2	23X20X151K		RF Cathode
R11	10KΩ	1/2	23X20X103K		RF Plate
R12	15KΩ	1/2	23X30X153K		RF Decoupling
R13	1 Meg. 20%	1/2	23X20X105M		Mixer Grid
R14	10KΩ	1	23X30X103K		Mixer Decoupling
R15	100KΩ	1/2	23X20X104K	BTS-100K	AGC Network
R16	22KΩ	1/2	23X20X223K		Osc. Grid
R17	2200Ω	1/2	23X20X222K	BTS-2200	Osc. Plate
R18	22KΩ	1/2	23X20X223K		1st Video IF Grid
R19	68Ω	1/2	23X20X680K		1st Video IF Cathode
R20	2200Ω	1/2	23X20X222K	BTS-2200	1st Video IF Decoupling
R21	100KΩ	1/2	23X20X104K	BTS-100K	AGC Network
R22	5600Ω	1/2	23X20X562K		2nd Video IF Grid
R23	68Ω	1/2	23X20X680K		2nd Video IF Cathode
R24	2200Ω	1/2	23X20X222K	BTS-2200	2nd Video IF Decoupling
R25	100KΩ	1/2	23X20X104K	BTS-100K	AGC Network
R28	8200Ω	1/2	23X20X822K		3rd Video IF Grid
R27	68Ω	1/2	23X20X680K		3rd Video IF Cathode
R28	2200Ω	1/2	23X20X222K	BTS-2200	3rd Video IF Decoupling
R29	5600Ω	1/2	23X20X562K		4th Video IF Grid
R30	68Ω	1/2	23X20X680K		4th Video IF Cathode
R31	8200Ω	1/2	23X20X822K		4th Video IF Plate
R32	2200Ω	1/2	23X20X222K	BTS-2200	4th Video IF Decoupling
R33	5600Ω	1/2	23X20X562K	BTS-5600	AGC Network
R34	470KΩ 20%	1/2	23X20X474M	BTS-470K	AGC Network
R35	680KΩ	1/2	23X20X682K	BTS-6800	Video Det. Diode Load
R36	1 Meg. 20%	1/2	23X20X105M	BTS-1 Meg.	Video Amp. Grid
R37	3300Ω	1	23X30X332K	BTA-3300	Video Amp. Plate
R38	1 Meg. 20%	1/2	23X20X105M	BTS-1 Meg.	Cath. Follower Grid
R39	680Ω	1/2	23X20X681K	BTS-680	Cath. Follower Cathode
R40	4700Ω	1	23X30X472K	BTA-4700	Cath. Follower Plate
R41	470KΩ 20%	1/2	23X20X474M	BTS-470K	Video Output Grid
R42	680Ω	1/2	23X20X681K	BTS-680	Video Output Cathode
R43	2200Ω	2	23X40X222K	BT-2-2200	Video Output Plate
R44	2200Ω	2	23X40X222K	BT-2-2200	Video Output Plate
R45	100KΩ	1/2	23X20X104K	BTS-100K	Picture Tube Grid

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R46	100KΩ	1/2	23X20X104K	BTS-100K	Sync. Sep. Cathode
R47	100KΩ	1/2	23X20X104K	BTS-100K	DC Rest. Load
R48	1 Meg. 20%	1/2	23X20X105M	BTS-1 Meg.	Sync. Sep. Plate
R49	3900Ω	1/2	23X20X392K	BTS-3900	Sync. Phase Inv. Cathode
R50	1 Meg. 20%	1/2	23X20X105M	BTS-1 Meg.	Sync. Phase Inv. Grid
R51	3900Ω	1/2	23X20X392K	BTS-3900	Sync. Phase Inv. Plate
R52	3900Ω	1/2	23X20X392K	BTS-3900	Sync. Phase Inv. Plate
R53	68KΩ	1/2	23X20X683K	BTS-68K	Voltage Divider
R54	15KΩ	1/2	23X20X153K	BTS-15K	Voltage Divider
R55	150KΩ	1/2	23X20X154K		Sound IF Grid
R56	33KΩ	1/2	23X20X333K	BTS-33K	Sound IF Decoupling
R57	12KΩ	1/2	23X20X123K	BTS-12K	Voltage Divider
R58	10KΩ 5%	1/2	23X20X103J	BTS-10K-5%	Ratio Det. Diode Load
R59	10KΩ 5%	1/2	23X20X103J	BTS-10K-5%	Ratio Det. Diode Load
R60	33KΩ	1/2	23X20X333K	BTS-33K	De-emphasis
R61	330Ω	1/2	23X20X331K	BW-1-330	AF Amp. Cathode
R62	68KΩ	1	23X30X683K	BTA-68K	Voltage Divider
R63	4.7Ω	1	23X30X047K	BW-1-4.7	AF Amp. Filament
R64	2.2 Meg. 20%	1/2	23X20X225M	BTS-2.2 Meg.	AF Amp. Screen
R65	470KΩ 20%	1/2	23X20X474M	BTS-470K	AF Amp. Plate
R66	1000Ω	2	23X40X102K	BT-2-1000	Decoupling
R67	470KΩ 20%	1/2	23X20X474M	BTS-470K	Output Grid
R68	680Ω	1	23X30X681K	BTA-680	Output Cathode
R69	3700Ω	5	24BF372E		Filter-Wire Wound
R70	15KΩ	1/2	23X20X153K	BTS-15K	Integrator Network
R71	8200Ω	1/2	23X20X822K	BTS-8200	Integrator Network
R72	8200Ω	1/2	23X20X822K	BTS-8200	Integrator Network
R73	1.2 Meg.	1/2	23X20X125K	BTS-1.2 Meg.	Vert. Osc. Grid
R74	1.2 Meg. 20%	1/2	23X20X125M	BTS-1.2 Meg.	Vert. Hold Control Shunt-See Note 1
R75	6.8 Meg. 20%	1/2	23X20X685M	BTS-6.8 Meg.	Voltage Divider
R76	100KΩ	1/2	23X20X104K	BTS-100K	Voltage Divider
R77	1 Meg.	1/2	23X20X105K	BTS-1 Meg.	Vert. Osc. Plate-See Note 1
R78	3300Ω	1/2	23X20X332K	BTS-3300	Vert. Linearity Control Shunt
R79	560Ω	1/2	23X20X561K	BTS-560	Vert. Amp. Cathode
R80	2.2 Meg.	1/2	23X20X225K	BTS-2.2 Meg.	Vert. Amp. Grid
R81	3300Ω	1/2	23X20X332K	BTS-3300	Vert. Peaking
R82	100KΩ	1/2	23X20X104K	BTS-100K	Horiz. Sync. Disc. Load
R83	100KΩ	1/2	23X20X104K	BTS-100K	Horiz. Sync. Disc. Load
R84	4.7 Meg. 20%	1/2	23X20X475M	BTS-4.7 Meg.	Horiz. Sync. Disc. Load
R85	1000Ω	1/2	23X20X102K	BTS-1000	Feedback Network
R86	470KΩ	1/2	23X20X474K	BTS-470K	Horiz. AFC Filter Network
R87	1000Ω	1/2	23X20X102K	BTS-1000	Horiz. Osc. Cathode
R88	6800Ω	1	23X30X682K	BTA-6800	Horiz. Osc. Plate
R89	68KΩ	1/2	23X20X683K	BTS-68K	Horiz. Osc. Grid
R90	47KΩ	1/2	23X20X473K	BTS-47K	Horiz. Hold Control Shunt
R91	220KΩ	1/2	23X20X224K	BTS-220K	Horiz. Osc. Plate
R92	3300Ω	2	23X40X332K	BT-2-3300	Decoupling
R93	47Ω	1/2	23X40X470K		Parasitic Supp.
R94	470KΩ 20%	1/2	23X20X474K	BTS-470K	Horiz. Output Grid
R95	82Ω	1	23X30X820K	BW-1-82	Horiz. Output Cathode
R96	2200Ω	2	23X40X222K	BT-2-2200	Horiz. Output Screen
R97	25KΩ	20	24BH253E	DG-25,000	Damper Filter-Wire Wound
R98	3.3Ω	1	23X30X033K		HV Rect. Filament
R99	470KΩ 20%	1	23X30X474K		HV Filter
R100	500Ω	10	24BG501E	AB-500	Focus Coil Shunt-Wire Wound
R101	350Ω	10	24BG351E	AB-350	Series Focus Control-Wire Wound
R102	1300Ω	20	24BH132E		Filter-Wire Wound
R103	1100Ω	20	24BH112D		Filter-Wire Wound
R104	500Ω	10	24BG501E	AB-500	Voltage Dropping-Wire Wound-See Note 2
R105	6Ω	1			Filament Dropping-See Note 2 and 3

Note 1. Some models use 1.5 Meg. resistor in this application.
Note 2. Not used in all models.
Note 3. Some models use two resistors in parallel to obtain required resistance and wattage.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	760VCT	5VAC	5VAC	57C170-2	P-8159 ①	P-3169	TP-410①
	⑨ 2A	.240ADC	③ 3A	⑤ 2A				
				SEC. 4				
				6.3VAC				
				⑨ 8.1A				

① Mount vertically with universal mounting bracket.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	200Ω	1200Ω	55B115	A-8111	A-3000	TBO-1	Vert. Block Osc. Trans.
T3	310Ω	14Ω	55C121-1	A-8119	HVO-3	TFB-4	Hor. Output Trans.
	Tap ⑨ 190Ω	Tap ⑤ .7Ω					
		SEC. 2					
		0Ω					
T4	590Ω	7Ω	55C114	A-8115	A-3035	TSO-1	Vert. Output Trans.
T5A	14Ω		55B140	DY-1	MD-3		Hor. Deflection Coil
B	68Ω						Vert. Deflection Coil
T6	450Ω		51C1128				Focus Coil

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Hallicrafter PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	7.5KΩ	4.3Ω	450Ω	.5Ω	Part of SP1	A-3878	A-2931	RO-13	

SPEAKER

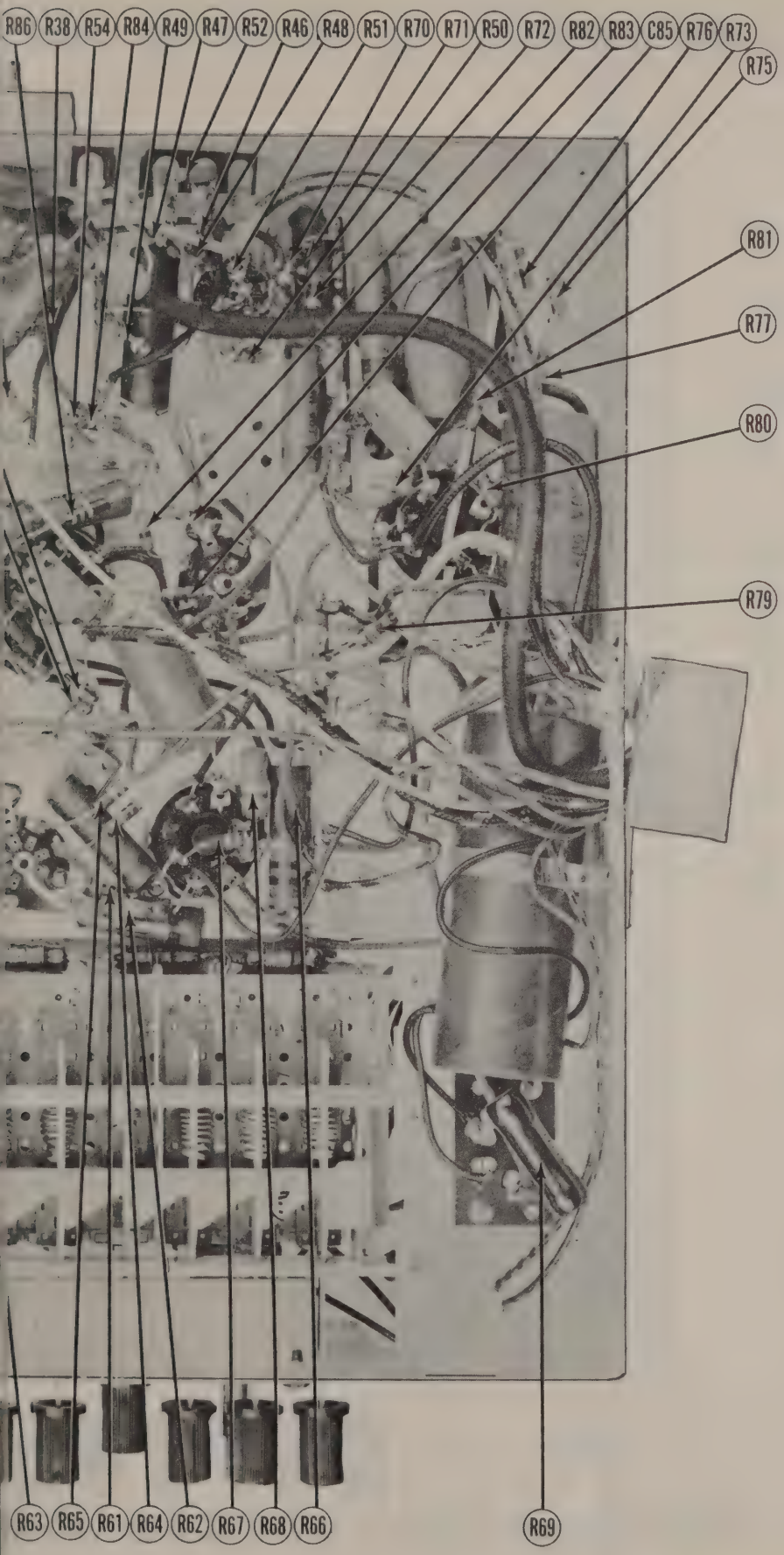
ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	HALLICRAFTER PART No.	JENSEN PART No.	QUAM PART No.	
SP1	63Ω	4.3Ω	85C082-1		8E63S	
	CONE DIA.	V. C. DIA.				
SP2	7 7/8"	9/16"				

COILS (RF-IF)

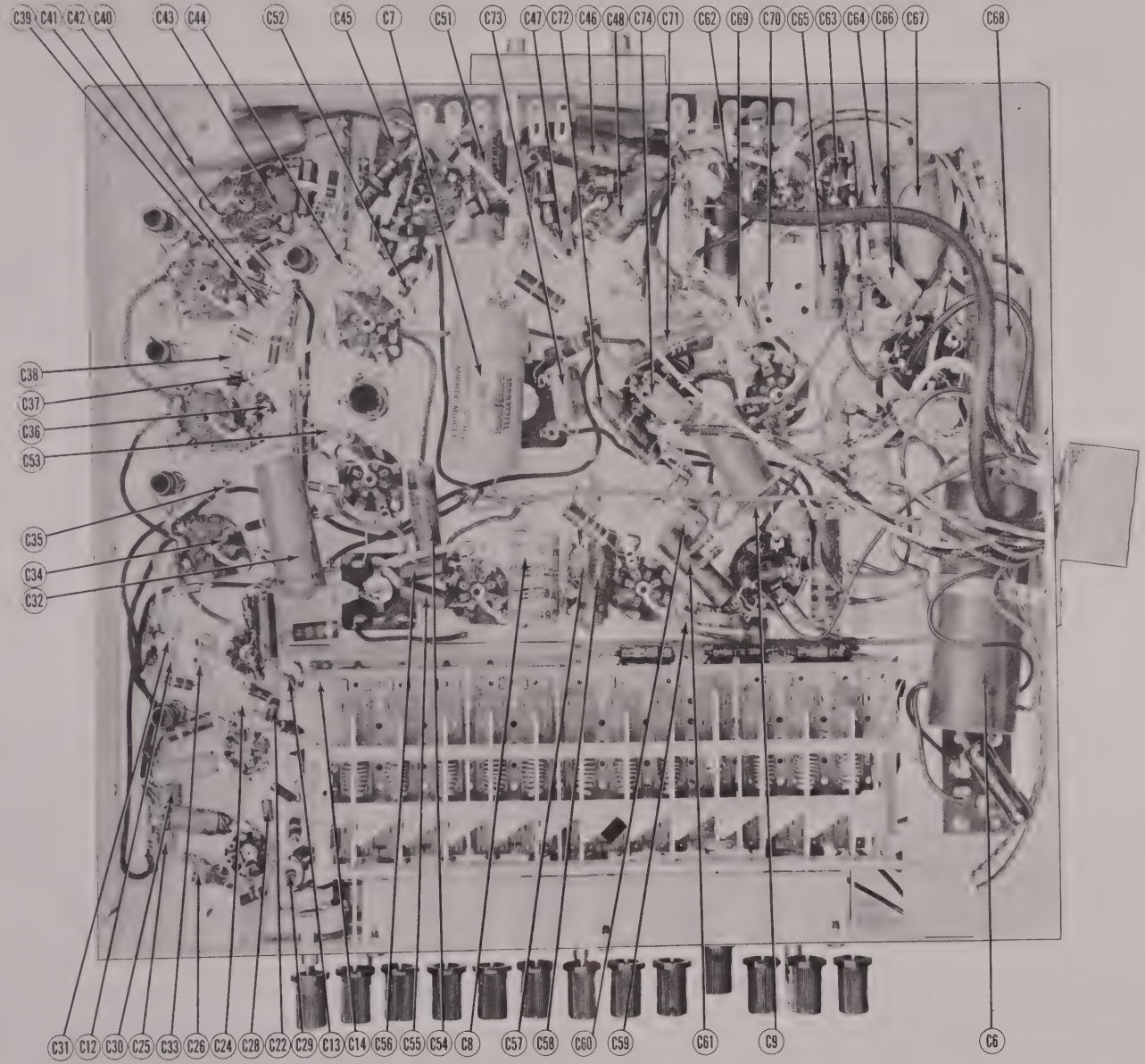
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	HALLICRAFTER PART No.	MEISSNER PART No.	
L1	Ant. Coil	.1Ω		51B1039		
L2	RF Plate	0Ω		51B1048		Wound on 33KΩ resistor.
L3	RF Plate	0Ω		51B1051		Wound on 22KΩ resistor.
L4	RF Plate	0Ω		51B1050		Wound on 33KΩ resistor.
L5	RF Plate	0Ω		51B1049		Wound on 1 Meg. resistor.
L6	RF Choke	3Ω		53B008		Red color code.
L7	Mixer Grid	0Ω		51B1048		Wound on 33KΩ resistor.
L8	Mixer Grid	0Ω		51B1047		Wound on 22KΩ resistor.
L9	Mixer Grid	0Ω		51B1046		Wound on 33KΩ resistor.
L10	Mixer Grid	0Ω		51A1041		Wound on 1 Meg. resistor.
L11	Fil. Choke	.1Ω		53A009		Blue color code.
L12	Osc. Grid	0Ω		51B1044		Wound on 1 Meg. resistor.
L13	Osc. Grid	0Ω		51B1043		Wound on 1 Meg. resistor.
L14	Osc. Grid	0Ω		51B1042		Wound on 1 Meg. resistor.
L15	Osc. Grid	0Ω		51A1041		Wound on 1 Meg. resistor.
L16	RF Choke	3Ω		53B008		Red color code.
L17	Fil. Choke	.1Ω	.1Ω	53A133		
L18	1st Video IF	.1Ω		50A372-1		
L19	2nd Video IF	.1Ω		50A372-1		
L20	3rd Video IF	.1Ω		50A372-1		
L21	4th Video IF	.1Ω		50A372-1		
L22	5th Video IF	.1Ω		50A372-1		
L23	Peaking	7Ω		51A1082		Wound on 1 Meg. resistor.
L24	Peaking	10Ω		51A1079		Wound on 39KΩ resistor.
L25	Peaking	12Ω		51A1080		Wound on 1 Meg. resistor.
L26	Peaking	6.3Ω		51A1130		Wound on 47KΩ resistor.
L27	Peaking	7Ω		51A1082		Wound on 1 Meg. resistor.
L28	Peaking	8.8Ω		51A1131		Wound on 56KΩ resistor.
L29	Peaking	5Ω		51A1129		Wound on 1 Meg. resistor.
L30	4.5MC Sound Trap	4.7Ω		51B1132		
L31	Sound IF	4.7Ω		51B1132		
L32	Ratio Det. Trans.	5Ω	1Ω	50B406		
L33	Horiz. Osc.	42Ω		50B411		
L34	Horiz. Lin.	38Ω		51B1071		
L35	Horiz. Size	.4Ω		51B1072		

MISCELLANEOUS

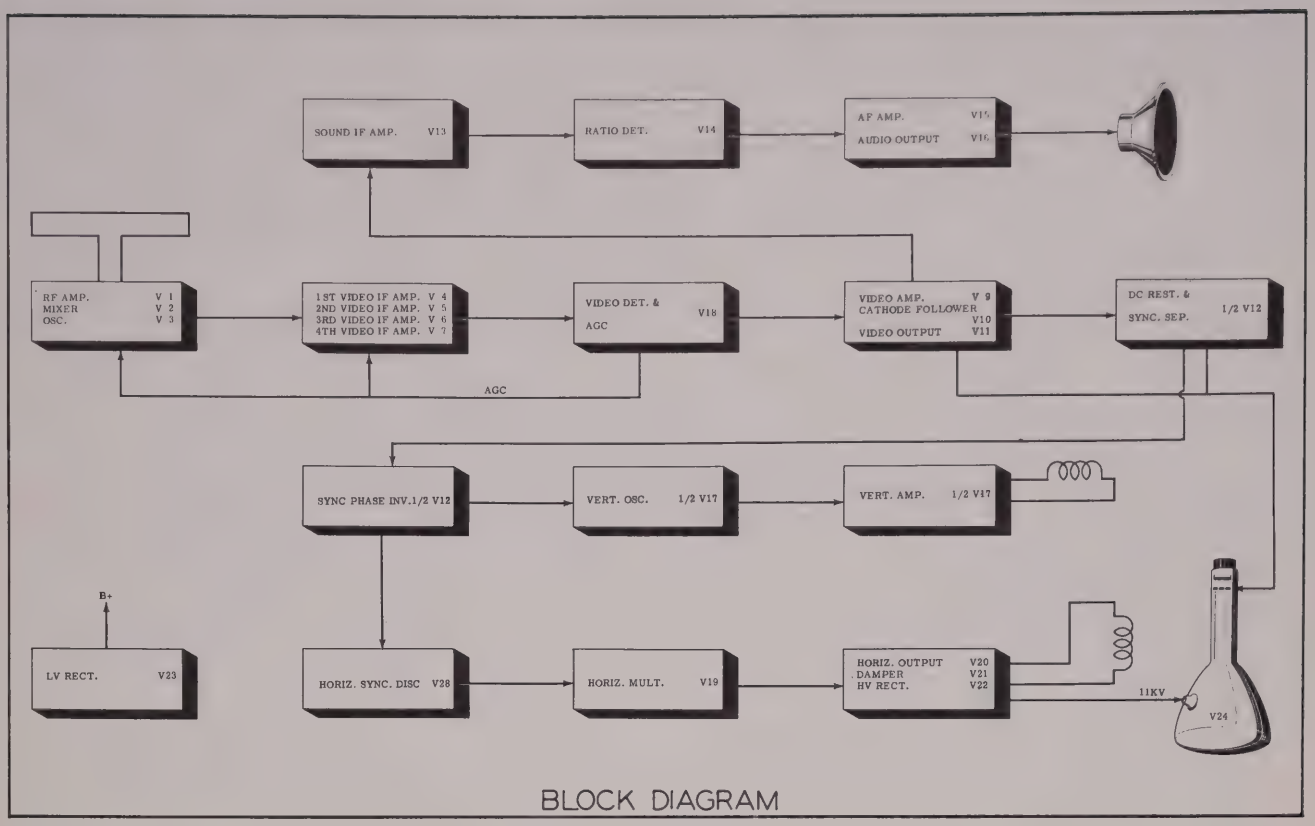
ITEM No.	PART NAME	HALLICRAFTER PART No.	NOTES
M1	RF Tuner		
M2	Fuse	39A334	.25A 250V
M3	Ion Trap	21A083-1	
M4	Trimmer	48A199	Fine tuning
M5	Trimmer	44A361	Horiz. drive
M6	Time Delay Relay		
	Ch. Sel. Assembly	41X12103	Complete with pushbutton switch, trimmers, coils, etc.
	Trimmer Assembly	44B362	RF Amp. and mixer, 12 sections
	Trimmer Assembly	44B363	Osc.
	Knob	17A041-2	Pushbutton and fine tuning
	Knob	15B148	Contrast
	Knob	15B146	Horiz. hold and brightness
	Knob	15B147	Vert. hold and volume



SISTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



BLOCK DIAGRAM

PHOTOFACT* Folder

MUNTZ MODEL
M-169

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MUNTZ MODEL
M-169

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

Date 5/50 Set No. 96—Folder No. 6

MUNTZ
MODEL M-169

MUNTZ MODEL M-169

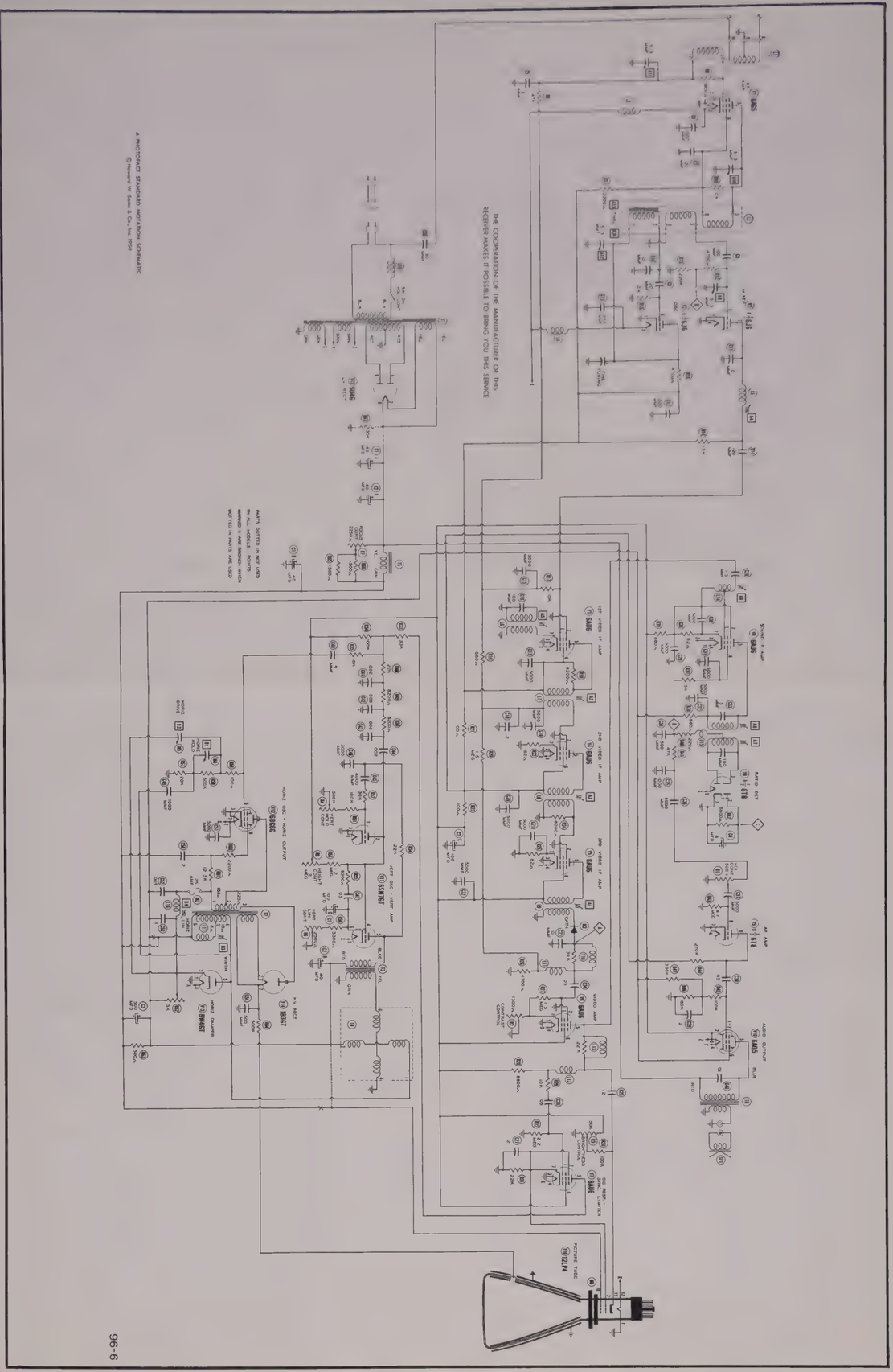
TRADE NAME	Muntz, Model M-169
MANUFACTURER	Muntz TV Inc., 1735 Belmont Ave., Chicago 13, Illinois
TYPE SET	Television Receiver
TUBES	Sixteen
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.5 Amp. at 117 Volts AC
TUNING RANGE	Channels 2 thru 13

INDEX

Alignment Instructions 5
Block Diagram 14
Disassembly Instructions 14
Horiz. Sweep Circuit Adjustment 14
Parts List and Description 8, 9
Photographs
Capacitor Identification 7
Chassis-Top View 3
Photographs (continued)
RF Tuner 6
Resistor Identification 10
Trans., Inductor and Alignment Identification 4
Schematic 2
Tube Placement Chart 13
Voltage and Resistance Measurements 12

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


A PHOTOFACT STANDARD NOTATION SCHEMATIC
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
PARTS DOTTED IN NOT USED
PARTS DOTTED IN PARTS ARE USED
9-96

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.4VDC	0V.	6.3VAC	0V.	135VDC	135VDC	0V.		
V 2	6J6	100VDC	80VDC	6.3VAC	0V.	2.6VDC	‡-6.2VDC	0V.		
V 3	6AU6	-.7VDC	0V.	0V.	6.3VAC	125VDC	125VDC	0V.		
V 4	6AU6	-.4VDC	0V.	0V.	6.3VAC	130VDC	130VDC	.9VDC		
V 5	6AU6	0V.	0V.	0V.	6.3VAC	135VDC	135VDC	.9VDC		
V 6	6AU6	.5VDC	0V.	0V.	6.3VAC	95VDC	135VDC	16VDC		
V 7	6AU6	0V.	6VDC	0V.	6.3VAC	115VDC	135VDC	6VDC		
V 8	6AU6	#9VDC	#9VDC	#0V.	‡6.3VAC	#215VDC	#155VDC	#9VDC		
V 9	6T8	-.3VDC	-.9VDC	-.7VDC	0V.	6.3VAC	0V.	0V.	-.4VDC	50VDC
V 10	6AQ5	#-6.4VDC	#0V.	#0V.	‡6.3VAC	#230VDC	#220VDC	#-6.4VDC		
V 11	6SN7GT	-32VDC -9VDC	32VDC 12VDC	32VDC 0V.	32VDC 12VDC	360VDC	36VDC 50VDC	6.3VAC	0V.	TOP CAP *
V 12	6BG6G	330VDC	6.3VAC	0V.	360VDC	-12VDC	110VDC	0V.	195VDC	
V 13	6W4GT	440VDC	440VDC	440VDC	360VDC	360VDC	0V.	0V.	6.3VAC	
V 14	1B3GT	* DO NOT MEASURE.								
V 15	5U4G	360VDC	400VDC	0V.	370VAC	0V.	370VAC	0V.	400VDC	
V 16	12LP4	0V.	5VDC	PIN 10 370VDC	PIN 11 0V. 130VDC	PIN 12 6.3VAC				

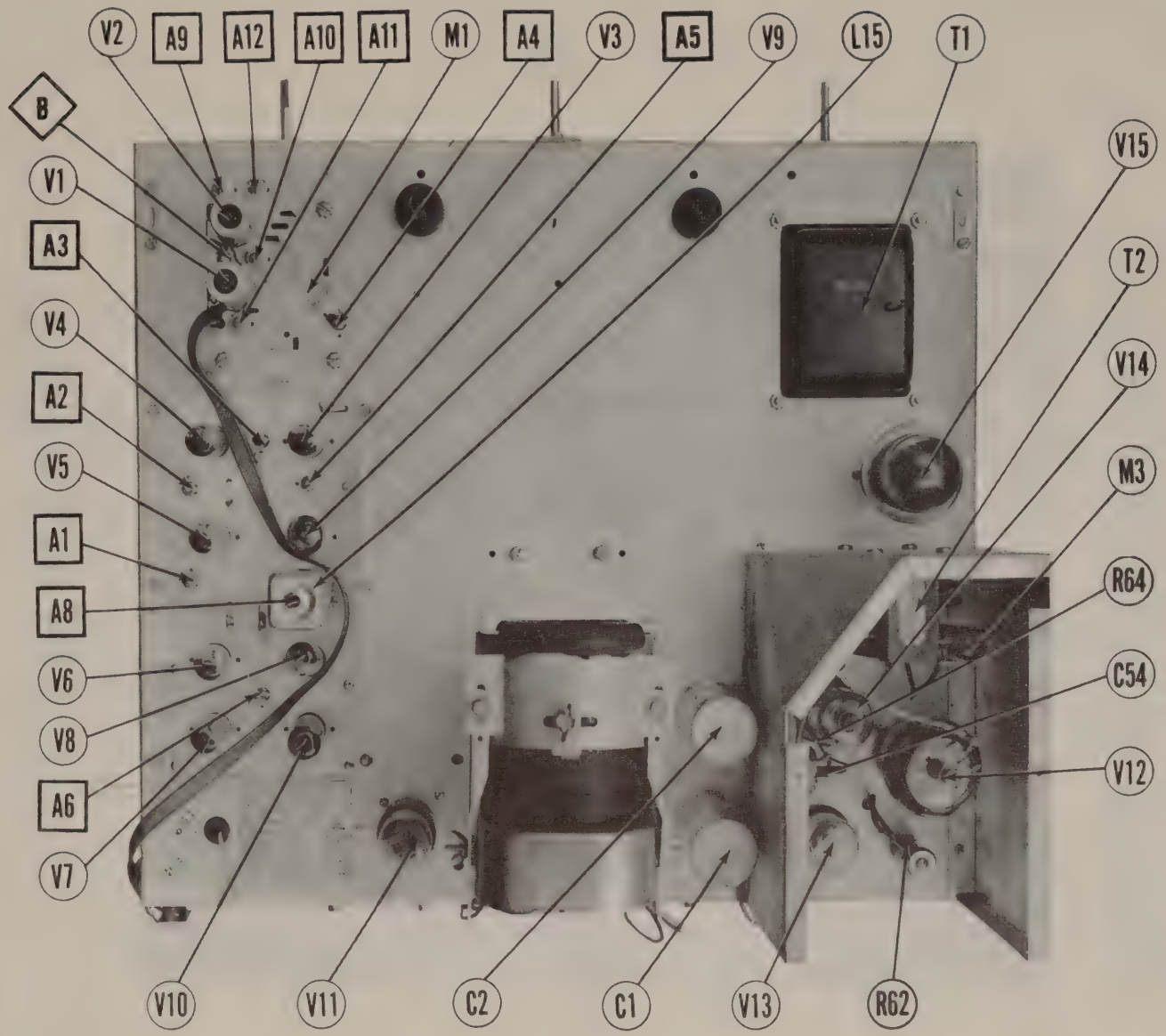
MEASURED FROM PIN 2 OF V10.
‡ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED ACROSS FILAMENTS.

RESISTANCE READINGS

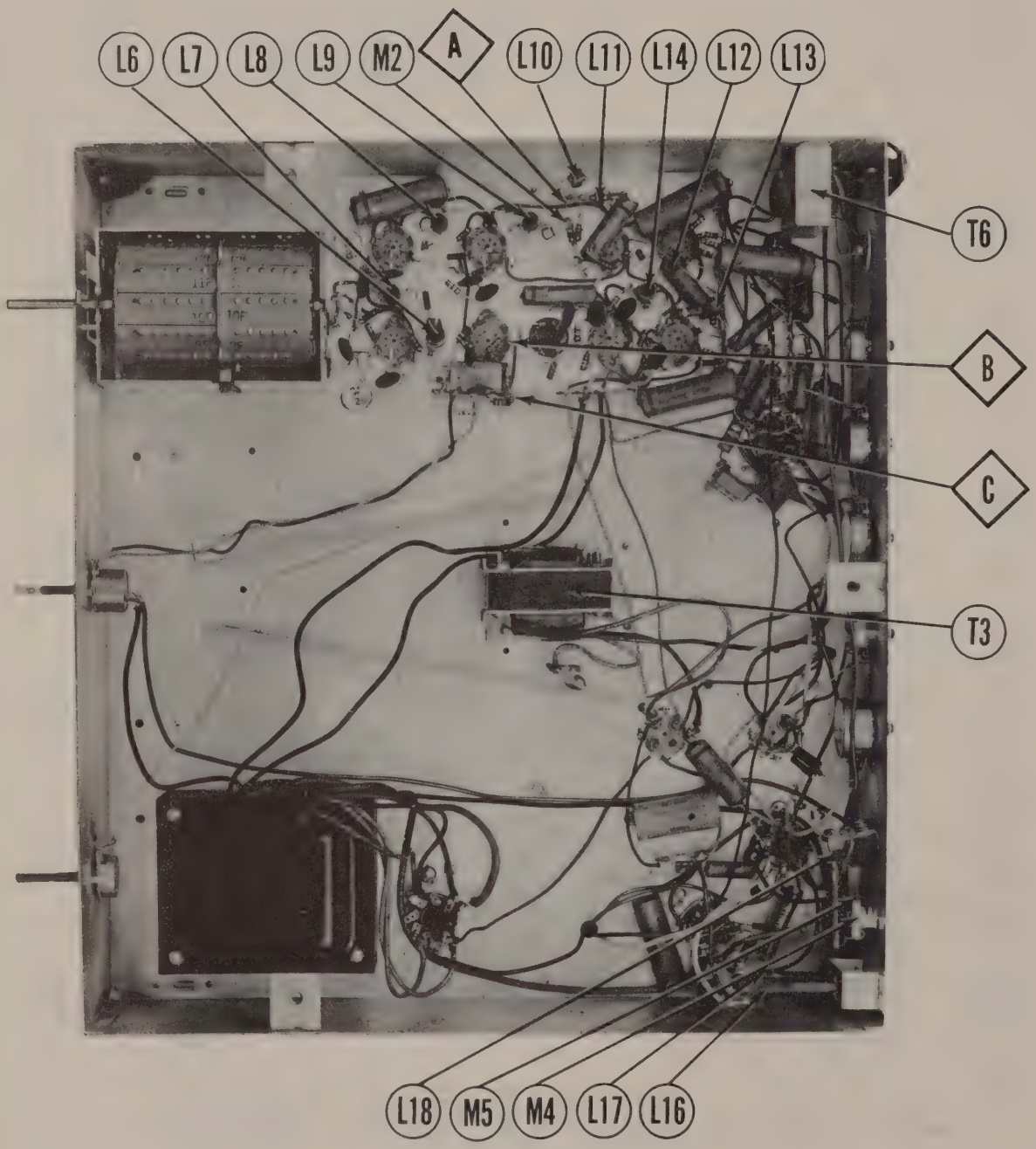
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.5 Meg.	0Ω	.1Ω	0Ω	#2.4KΩ	#2.4KΩ	0Ω		
V 2	6J6	#5KΩ	#15KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AU6	1.5 Meg.	0Ω	0Ω	.1Ω	#200Ω	#200Ω	.2Ω		
V 4	6AU6	1.5 Meg.	0Ω	0Ω	.1Ω	#100Ω	#100Ω	82Ω		
V 5	6AU6	.2Ω	0Ω	0Ω	.1Ω	#.2Ω	#0Ω	82Ω		
V 6	6AU6	1.5 Meg.	0Ω	0Ω	.1Ω	#6.8KΩ	#0Ω	1.5KΩ		
V 7	6AU6	2.2 Meg.	22KΩ	0Ω	.1Ω	#133KΩ	#0Ω	22KΩ		
V 8	6AU6	#680Ω	#680Ω	#0Ω	#.1Ω	†1000Ω	†15KΩ	#760Ω		
V 9	6T8	Inf.	Inf.	6.8KΩ	Inf.	0Ω	.1Ω	Inf.	0Ω	4.7 Meg.	#270KΩ
V 10	6AQ5	180KΩ	#0Ω	#0Ω	6.1Ω	†640Ω	†350Ω	180KΩ		
V 11	6SN7GT	100KΩ	#1.2Meg. #3.2Meg.	0Ω	#1.2Meg. #3.2Meg.	†950Ω	5.8KΩ 3.3KΩ	.1Ω	0Ω	
V 12	6BG6G	†16KΩ	.1Ω	0Ω	†340Ω	520KΩ	#130KΩ	0Ω	†14.5KΩ	TOP CAP †3KΩ
V 13	6W4GT	†3.2KΩ	†3.2KΩ	†3KΩ	†330Ω	†340Ω	Inf.	0Ω	.1Ω	
V 14	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †3.3KΩ
V 15	5U4G	†340Ω	45KΩ	Inf.	44Ω	Inf.	44Ω	Inf.	45KΩ	
V 16	12LP4	0Ω	22KΩ	PIN 10 †300Ω	PIN 11 150KΩ 100KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 8 OF V15.
# MEASURED FROM PIN 2 OF V10.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Remove the local oscillator tube (V2) and replace it with a 6J6 which has pin 2 removed.
After completing video IF alignment, replace the proper 6J6 and turn the channel switch to channel 12 or 13 (which ever is not used locally) and retouch A4 for proper response.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	24MC (10MC SWP)	21MC 22.5MC 24.6MC 25.5MC	Any	Vert. Amp. to Point (A). Low side to chassis.	A1, A2, A3, A4	Adjust for response curve similar to Fig 1.
2.	Direct	"	"	21MC (maximum output)	"	"	A5	Adjust for minimum marker indication at the 21MC point on response curve.

SOUND IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	.001MFD	High side to pin 1 (Grid) of 6AU6 (V6). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A6, A7	Disconnect stabilizer capacitor C4. Adjust for maximum amplitude and symmetry as per Fig 2.
4.	.001MFD	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A8	Reconnect capacitor C4. Adjust A8 so 4.5MC occurs at center of crossover lines as per Fig 3. Slightly retouch A6 for maximum amplitude and straightness of crossover lines.

RF ALIGNMENT

The RF portion of this receiver has been pre-set at the factory and is very stable. Alignment of these circuits should not be attempted unless they are definitely known to be out of alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	207MC (15MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point (D). Low side to chassis.	A9, A10, A11	Adjust for response curve similar to Fig 4 with markers above 80%.
6.	"	"	213MC (15MC SWP)	211.25MC 215.75MC	13	"		Check for response curve similar to Fig 4. If markers fall below 70% on any channel, make slight adjustment of A9, A10 and A11 with channel selector set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (15MC SWP)	199.25MC 203.75MC	11			
			195MC (15MC SWP)	193.25MC 197.75MC	10			
			189MC (15MC SWP)	187.25MC 191.75MC	9			
			183MC (15MC SWP)	181.25MC 185.75MC	8			
			177MC (15MC SWP)	175.25MC 179.75MC	7			
			85MC (15MC SWP)	83.25MC 87.75MC	6			
			79MC (15MC SWP)	77.25MC 81.75MC	5			
			69MC (15MC SWP)	67.25MC 71.75MC	4			
			63MC (15MC SWP)	61.25MC 65.75MC	3			
			57MC (15MC SWP)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary.
If a majority of the channels seem to be off frequency approximately the same amount, it may be possible to correct them in one step using A12. It should be noted that this is an all channel oscillator circuits adjustment and should not be adjusted for any individual channel. If adjustment of A12 will not bring all channels within the range of the fine tuning control, it will be necessary to adjust the individual channel oscillator adjustment screw for each channel that is off frequency.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A13	Adjust to place sound marker as shown in Fig 5. The video marker should be at 40%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A14	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A15	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A16	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A17	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A18	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A19	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A20	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A21	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A22	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A23	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A24	

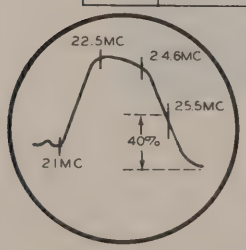


FIG. 1

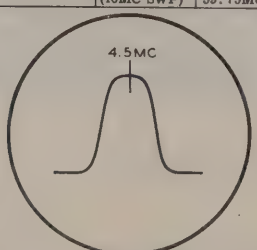


FIG. 2

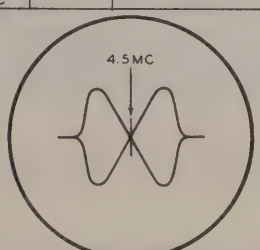


FIG. 3

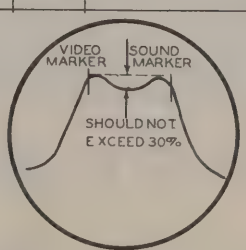


FIG. 4

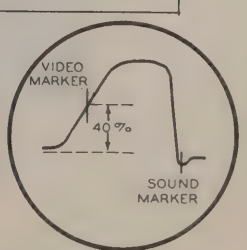
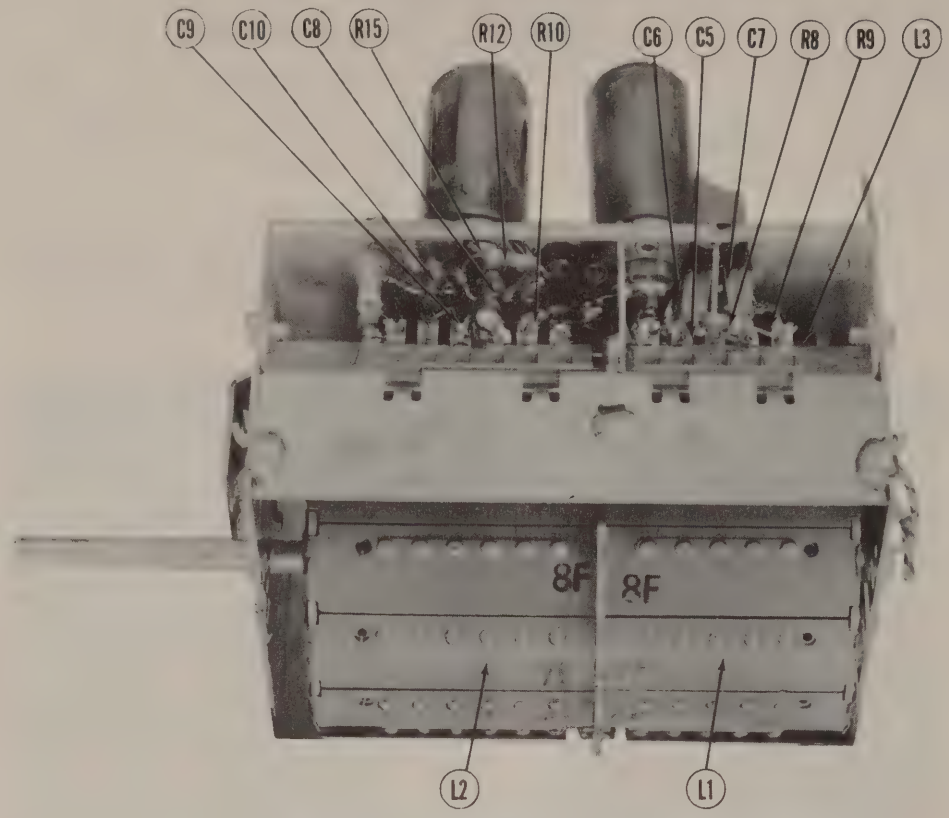
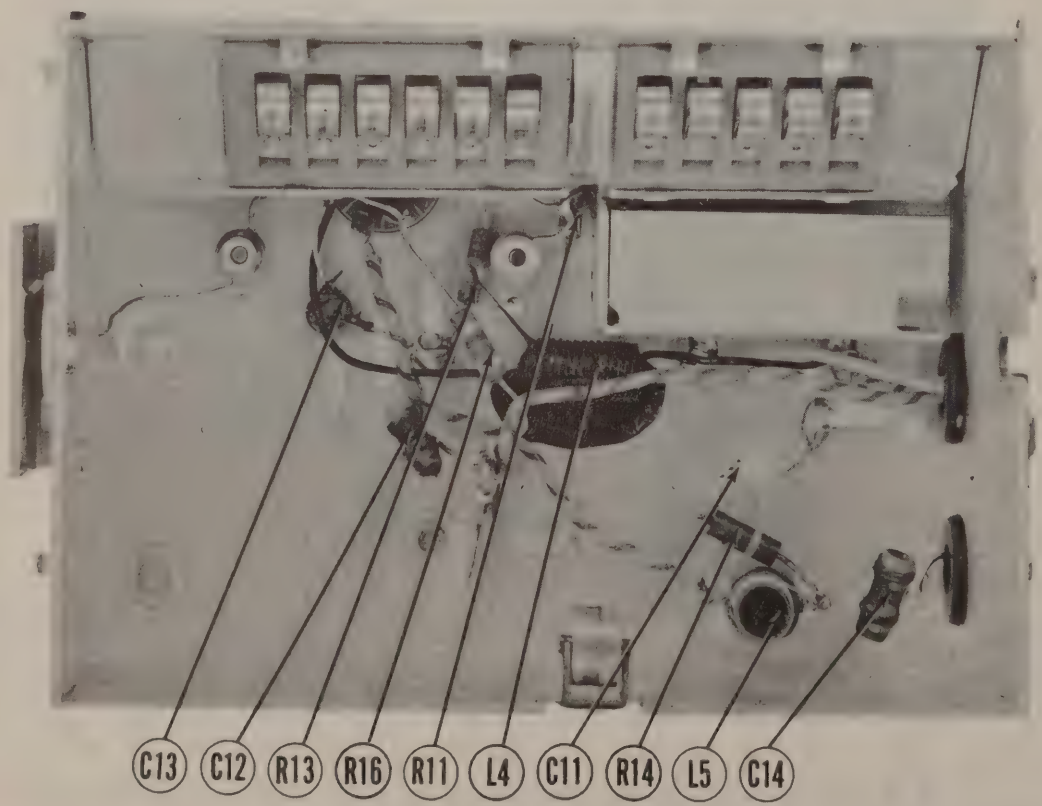


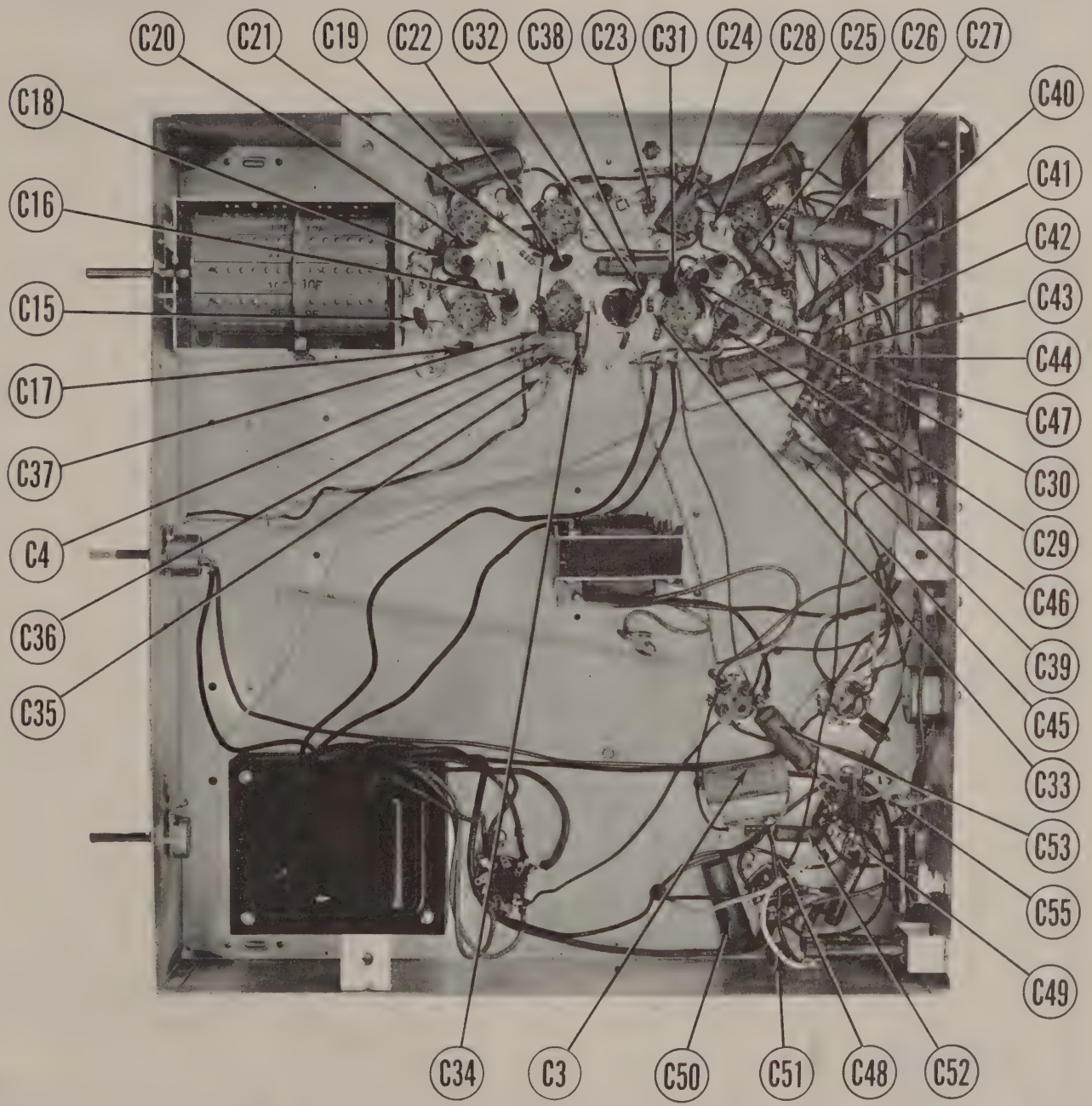
FIG. 5



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		MUNTZ PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AU6	6AU6	7BK	
V4	2nd Video IF	6AU6	6AU6	7BK	
V5	3rd Video IF	6AU6	6AU6	7BK	
V6	Video Amp.	6AU6	6AU6	7BK	
V7	DC Rest.-Sync. Limiter	6AU6	6AU6	7BK	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Det.-AF Amp.	6T8	6T8	9E	
V10	Audio Output	6AQ5	6AQ5	7BZ	
V11	Vert. Osc.-Vert. Amp.	6SN7GT	6SN7GT	8BD	
V12	Hor. Osc.-Hor. Output	6BG6G	6BG6G	5BT	
V13	Hor. Damper	6W4GT	6W4GT	4CG	
V14	HV Rect.	1B3GT	1B3GT	3C	
V15	LV Rect.	5U4G	5U4G	5T	
V16	Picture Tube	12LP4	12LP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MUNTZ PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	500	CE-0026A	AF88K20E				▲ Filter
B	40	500						■ Filter
C	100	200						▲ Vert. Output Cath. Bypass
C2A	40	500	CE-0026A	AF88K20E				▲ Filter
B	40	500						■ Filter
C	100	200						▲ Filter
C3	500	6	CE-0030	PRS6/500			UHC-506	Hor. Sweep Coupling
C4	4	50	CE-0029	PRS150/4			TVA-13	Stabilizing Cap.
C5	5			S15DNPO	D2-4.7	NPOK-5		Fixed Trimmer
C6	1000			GP1000M	D6-102	GP2L-001		RF Filament Bypass
C7	120			GP120K	D6-121	GP2K-120		RF Screen Bypass
C8	100			GP100M	D6-101	GP1K-100		RF Coupling
C9	20			S120KNPO	D2-20	NPOK-20		Osc. Grid Cap.
C10	10			S110DNPO	D2-10	NPOK-10		Fixed Trimmer
C11	10			CN10DNPO	D2-10	NPOK-10		Fixed Trimmer
C12	1000			GP1000M	D6-102	GP2L-001		RF Bypass
C13	1000			GP1000M	D6-102	GP2L-001	29C4	Conv. Filament Bypass
C14	120			GP120K	D6-121	GP2K-120		IF Coupling
C15	5000		CC-0060	BPD-5	D6-502	811-005	29C1	AGC Filter
C16	100	300		1469-0001	D2-100	NPOM-100	MS-31	Fixed Trimmer
C17	5000		CC-0060	BPD 5	D6-502	811-005	29C1	RF Bypass
C18	5000		CC-0060	BPD-5	D6-502	811-005	29C1	AGC Filter
C19	.2	400	CP-0033	P488-22			TC-2	AGC Filter
C20	5000		CC-0060	BPD-5	D6-502	811-005	29C1	2nd V. IF Decoupling
C21	5000		CC-0060	BPD-5	D6-502	811-005	29C1	3rd V. IF Cath. Bypass
C22	5000		CC-0060	BPD-5	D6-502	811-005	29C1	RF Bypass
C23	10		CC-0059	GP10K	D6-100	GP1K-10	MS-41	V. Diode Filter
C24	.05	400	CP-0010	P488-05			TM-15	Video Coupling
C25	.2	400	CP-0033	P488-22			TC-2	Video Coupling
C26	.05	400	CP-0010	P488-05			TM-15	Video Coupling
C27	.2	400	CP-0033	P488-22			TC-2	DC Res. Cath. Bypass
C28	1.5		CC-0058	CN1.5CNPO	D2-1.5	NPOK-1.5		S. IF Coupling
C29	5000		CC-0060	BPD-5	D6-502	811-005	29C1	RF Bypass
C30	5000		CC-0060	BPD-5	D6-502	811-005	29C1	S. IF Cathode Bypass
C31	5000		CC-0060	BPD-5	D6-502	811-005	29C1	S. IF Screen Bypass
C32	5000		CC-0060	BPD-5	D6-502	811-005	29C1	S. IF Plate Decoupling
C33	5		CC-0067	CN5DNPO	D2-4.7	NPOK-5	MS-55	Fixed Trimmer
C34	500		CC-0065	GP500M	D6-501	GP2K-500	1FM-35	Diode Load Cap.
C35	1000		CC-0061	GP1000M	D6-102	GP2L-001	1FM-21	De-emphasis
C36	5000		CC-0060	BPD-5	D6-502	811-005	29C1	Audio Coupling
C37	5000		CC-0060	BPD-5	D6-502	811-005	29C1	Audio Coupling
C38	.05	400	CP-0010	P488-05			TM-15	Audio Coupling
C39	.2	400	CP-0033	P488-22			TC-2	Bias Filter
C40	.01	600	CP-0019	P688-01	D6-103	811-01	TM-11	Output Plate Bypass
C41	.002	600	CP-0016	P688-002	D6-202	GP2M-002	TM-22	Integrator Net.
C42	.006	600	CP-0017	P688-006	D6-562	GP2M-0056	TM-26	Integrator Net.
C43	.006	600	CP-0017	P688-006	D6-562	GP2M-0056	TM-26	Integrator Net.
C44	.002	600	CP-0016	P688-002	D6-202	GP2M-002	TM-22	Vert. Osc. Grid Cap.
C45	4000	1000	CM-0037					Vert. MV Feedback
C46	2000	1000	CM-0035					Voltage Divider
C47	.05	600	CP-007	P688-05			TM-15	Vert. Discharge
C48	5		CC-0067	GP5K	D2-4.7	NPOK-5	MS-55	Hor. Sync. Coupling
C49	1000		CC-0069	GP1000M	D6-102	GP2L-001	29C4	Hor. Feedback
C50	.2	400	CP-0033	P488-22			TC-2	Hor. Output Screen Decoupling
C51	5000		CC-0060	BPD-5	D6-502	811-005	29C1	Hor. Output Filament Bypass
C52	.005	600	CP-0035	P688-005			TM-25	Damper Filter
C53	.1	400	CP-0034	P488-1			TM-1	Damper Filter
C54	500	20000	CC-0070					HV Filter
C55	30		CC-0068	GP30K	D6-330	GP1K-33	MS-43	Line Ant. Coupling

ITEM No.	RATING		REPLACEMENT DATA		
	RESIST-ANCE	WATTS	MUNTZ PART No.	IRC PART No.	CLAR PAR
R1A	500KΩ	½	VC-0025B	Q13-133	M-60
B	Switch		Not Req.	76-1	SW-A
R2	1500Ω	½	VC-0023B		
R3A	50KΩ	½	VC-0029A	Q11-123	M-44
B	Shaft		Not Req.	Not Req.	Not R
R4A	500KΩ	½	VC-0027A	Q11-133	M-58
B	Shaft		Not Req.	Not Req.	Not R
R5A	2 Meg.	½	VC-0026A	Q11-139	M-83
B	Shaft		Not Req.	Not Req.	Not R
R6A	2500Ω	½	VC-0028A	Q11-112	M-15
B	Shaft		Not Req.	Not Req.	Not R
R7	2250Ω	2	VC-0024A	W-3000	43-30

RE

ITEM No.	RATING		REPLACEMENT DATA	
	RESISTANCE	WATTS	MUNTZ PART No.	IRC PART No.
R8	3900Ω	½		BTS-3900
R9	47KΩ	½		BTS-47K
R10	10KΩ	½		BTS-10K
R11	2200Ω	½		BTS-2200
R12	4700Ω	½		BTS-4700
R13	220KΩ	½		BTS-220K
R14	15KΩ	½		BTS-15K
R15	10KΩ	½		BTS-10K
R16	4700Ω	½		BTS-4700
R17	10KΩ	½		
R18	8200Ω	½		
R19	680Ω 20%	½		BTS 680
R20	1.5 Meg. 20%	½		BTS-1.5 Me
R21	100Ω 20%	½		
R22	82Ω	½		
R23	100Ω 20%	½		
R24	8200Ω	½		
R25	82Ω	½		
R26	4700Ω	½		BTS-4700
R27	1.5 Meg. 20%	½		BTS-1.5 Me
R28	6800Ω	1		BTA-6800
R29	10KΩ	½		BTS-10K
R30	100KΩ 20%	½		BTS-100K
R31	22KΩ	½		BTS-22K
R32	2.2 Meg. 20%	½		BTS-2.2 Me
R33	33KΩ	½		BTS-33K
R34	100KΩ 20%	½		BTS-100K
R35	18KΩ	½		BTS-18K
R36	82Ω	½		
R37	15KΩ	½		
R38	680Ω 20%	½		BTS-680
R39	680Ω 20%	½		BTS-680
R40	220Ω 20%	½		
R41	47KΩ 20%	½		BTS-47K
R42	6800Ω	½		BTS-6800
R43	4.7 Meg.	½		BTS-4.7 Me
R44	270KΩ	½		BTS-270K
R45	100KΩ 20%	½		BTS-100K
R46	180KΩ 5%	½		BTS 180K-5%
R47	330KΩ 5%	½		BTS-330K 5%
R48	22KΩ	½		BTS-22K
R49	8200Ω	½		BTS-8200
R50	8200Ω	½		BTS-8200
R51	100KΩ	½		BTS-100K
R52	30KΩ	2		BT-2-33K
R53	1.2 Meg.	½		BTS-1.2 Meg
R54	22KΩ	½		BTS-22K
R55	8200Ω	½		BTS-8200
R56	3300Ω	½		BTS-3300
R57	20KΩ	10		AB-20K
R58	500KΩ	1		BTA-470K
R59	100Ω 20%	½		
R60	2200Ω	1		BTA-2200
R61	12.5KΩ	10		AB-1250
R62	3000Ω	25		EP-3000
R63	500Ω 20%	½		BTS-470
R64	500KΩ 20%	1		
R65	1500Ω 20%	1		BTA-1500
R66	1500Ω 20%	1		BTA-1500
R67	30KΩ	10		

Note 1. Some models use 1.2 Meg. resistor in this applica
Note 2. Not used in 10" and 12" chassis under serial No. 3
Note 3. Some models use 1.5 Meg. resistor in this applica
Note 4. Some models use two 30KΩ, 2 watt resistors in pa
Note 5. Not used in all models.

TRANSFORM

ITEM No.	RATING				MUNTZ PART No.
	PRI.	SEC. 1	SEC. 2	SEC. 3	
T1	117VAC ⓐ 1.5A	740VCT ⓐ.170ADC	5VAC ⓐ 3A	6.3VAC ⓐ 6A SEC. 4 6.3VAC ⓐ .75A	TP-0015-C

* Drill new mounting holes.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: MUNTZ PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AU6	6AU6	7BK	
V4	2nd Video IF	6AU6	6AU6	7BK	
V5	3rd Video IF	6AU6	6AU6	7BK	
V6	Video Amp.	6AU6	6AU6	7BK	
V7	DC Rest.-Sync Limiter	6AU6	6AU6	7BK	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Det.-AF Amp	6T8	6T8	9E	
V10	Audio Output	6AQ5	6AQ5	7B2	
V11	Vert. Osc.-Vert. Amp	6SN7GT	6SN7GT	8BD	
V12	Hor. Osc.-Hor. Output	6BG6G	6BG6G	5BT	
V13	Hor. Damper	6W4GT	6W4GT	4CG	
V14	HV Rect.	1B3GT	1B3GT	3C	
V15	LV Rect.	5U4G	5U4G	5T	
V16	Picture Tube	12LP4	12LP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MUNTZ PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	500	CE-0026A	AF88K20E				▲ Filter
B	40	500						■ Filter
C	100	200						▲ Vert. Output Cath. Bypass
C2A	40	500	CE-0026A	AF88K20E				▲ Filter
B	40	500						■ Filter
C	100	200						▲ Filter
C3	500	6	CE-0030	PRS6/500			UHC-506	Hor. Sweep Coupling
C4	4	50	CE-0029	PRS150/4			TVA-13	Stabilizing Cap.
C5	5			S15DNPO	D2-4.7	NPOK-5		Fixed Trimmer
C6	1000			GP1000M	D6-102	GP2L-001		RF Filament Bypass
C7	120			GP120K	D6-121	GP2K-120		RF Screen Bypass
C8	100			GP100M	D6-101	GP1K-100		RF Coupling
C9	20			S20KNPO	D2-20	NPOK-20		Osc. Grid Cap.
C10	10			S10EDNPO	D2-10	NPOK-10		Fixed Trimmer
C11	10			CN10DNPO	D2-10	NPOK-10		Fixed Trimmer
C12	1000			GP1000M	D6-102	GP2L-001		RF Bypass
C13	1000			GP1000M	D6-102	GP2L-001	29C4	Conv. Filament Bypass
C14	120			GP120K	D6-121	GP2K-120		IF Coupling
C15	5000		CC-0060	BPD-5	D6-502	811-005	29C1	AGC Filter
C16	100	300		1469-0001	D2-100	NPOM-100	MS-31	Fixed Trimmer
C17	5000		CC-0060	BPD-5	D6-502	811-005	29C1	RF Bypass
C18	5000		CC-0060	BPD-5	D6-502	811-005	29C1	AGC Filter
C19	2	400	CP-0033	P488-22			TC-2	AGC Filter
C20	5000		CC-0060	BPD-5	D6-502	811-005	29C1	2nd V. IF Decoupling
C21	5000		CC-0060	BPD-5	D6-502	811-005	29C1	3rd V. IF Cath. Bypass
C22	5000		CC-0060	BPD-5	D6-502	811-005	29C1	RF Bypass
C23	10		CC-0059	GP10K	D6-100	GP1K-10	MS-41	V. Diode Filter
C24	.05	400	CP-0010	P488-05			TM-15	Video Coupling
C25	.2	400	CP-0033	P488-22			TC-2	Video Coupling
C26	.05	400	CP-0010	P488-05			TM-15	Video Coupling
C27	.2	400	CP-0033	P488-22			TC-2	DC Res. Cath. Bypass
C28	1.5		CC-0058	CN1.5CNPO	D2-1.5	NPOK-1.5		S. IF Coupling
C29	5000		CC-0060	BPD-5	D6-502	811-005	29C1	RF Bypass
C30	5000		CC-0060	BPD-5	D6-502	811-005	29C1	S. IF Cathode Bypass
C31	5000		CC-0060	BPD-5	D6-502	811-005	29C1	S. IF Screen Bypass
C32	5000		CC-0060	BPD-5	D6-502	811-005	29C1	S. IF Plate Decoupling
C33	5		CC-0067	CN5DNPO	D2-4.7	NPOK-5	MS-55	Fixed Trimmer
C34	500		CC-0065	GP500M	D6-501	GP2K-500	1FM-35	Diode Load Cap.
C35	1000		CC-0061	GP1000M	D6-102	GP2L-001	1FM-21	De-emphasis
C36	5000		CC-0060	BPD-5	D6-502	811-005	29C1	Audio Coupling
C37	5000		CC-0060	BPD-5	D6-502	811-005	29C1	Audio Coupling
C38	.05	400	CP-0010	P488-05			TM-15	Audio Coupling
C39	.2	400	CP-0033	P488-22			TC-2	Bias Filter
C40	.01	600	CP-0019	P688-01	D6-103	811-01	TM-11	Output Plate Bypass
C41	.002	600	CP-0016	P688-002	D6-202	GP2M-003	TM-22	Integrator Net.
C42	.006	600	CP-0017	P688-006	D6-562	GP2M-0056	TM-26	Integrator Net.
C43	.006	600	CP-0017	P688-006	D6-562	GP2M-0056	TM-26	Integrator Net.
C44	.002	600	CP-0016	P688-002	D6-202	GP2M-002	TM-22	Vert. Osc. Grid Cap.
C45	4000	1000	CM-0037					Vert. MV Feedback
C46	2000	1000	CM-0035					Voltage Divider
C47	.05	600	CP-007	P688-05			TM-15	Vert. Discharge
C48	5		CC-0067	GP5K	D2-4.7	NPOK-5	MS-55	Hor. Sync. Coupling
C49	1000		CC-0069	GP1000M	D6-102	GP2L-001	29C4	Hor. Feedback
C50	2	400	CP-0033	P488-22			TC-2	Hor. Output Screen Decoupling
C51	5000		CC-0060	BPD-5	D6-502	811-005	29C1	Hor. Output Filament Bypass
C52	.005	600	CP-0035	P688-005			TM-25	Damper Filter
C53	.1	400	CP-0034	P488-1			TM-1	Damper Filter
C54	500	20000	CC-0070					HV Filter
C55	30		CC-0068	GP30K	D6-330	GP1K-33	MS-43	Line Ant. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MUNTZ PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	VC-0025B	Q13-133	M-60-Z	B-60-Z	Volume control
B	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R1A per instructions
R2	1500Ω	½	VC-0023B			B-6	Contrast control
R3A	50KΩ	½	VC-0029A	Q11-123	M-44-S	AN-31	Brightness control
B	Shaft		Not Req.	Not Req.	Not Req.	AK-1	Attach to R3A per instructions
R4A	500KΩ	½	VC-0027A	Q11-133	M-58-S	AN-59	Vert. hold control
B	Shaft		Not Req.	Not Req.	Not Req.	AK-1	Attach to R4A per instructions
R5A	2 Meg.	½	VC-0026A	Q11-139	M-83-S	AN-75	Height control
B	Shaft		Not Req.	Not Req.	Not Req.	AK-1	Attach to R5A per instructions
R6A	2500Ω	½	VC-0028A	Q11-112	M-15-S	AN-7	Vert. linearity control
B	Shaft		Not Req.	Not Req.	Not Req.	AK-1	Attach to R6A per instructions
R7	2250Ω	2	VC-0024A	W-3000	43-3000		Focus control-Wire Wound

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MUNTZ PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R8	3900Ω	½		BTS-3900	Ant. Coil Shunt
R9	47KΩ	½		BTS-47K	AGC Network
R10	10KΩ	½		BTS-10K	RF Plate Coil Shunt
R11	2200Ω	½		BTS-2200	RF Decoupling
R12	4700Ω	½		BTS-4700	Conv. Grid
R13	220KΩ	½		BTS-220K	Conv. Grid
R14	15KΩ	½		BTS-15K	Conv. Plate
R15	10KΩ	½		BTS-10K	Osc. Grid
R16	4700Ω	½		BTS-4700	Osc. Plate
R17	10KΩ	½			1st Video IF Grid
R18	8200Ω	½			2nd Video IF Transformer Shunt
R19	680Ω 20%	½		BTS-680	AGC Network
R20	1.5 Meg. 20%	½		BTS-1.5 Meg.	AGC Network
R21	100Ω 20%	½			Decoupling
R22	82Ω	½			2nd Video IF Cathode
R23	100Ω 20%	½			Decoupling
R24	8200Ω	½			3rd Video IF Transformer Shunt
R25	82Ω	½			3rd Video IF Cathode
R26	4700Ω	½		BTS-4700	Video Det. Diode Load
R27	1.5 Meg. 20%	½		BTS 1.5 Meg.	Video Amp. Grid-See Note 1
R28	6800Ω	1		BTA-6800	Video Amp. Plate
R29	10KΩ	½		BTS-10K	Isolation
R30	100KΩ 20%	½		BTS-100K	Voltage Divider
R31	22KΩ	½		BTS-22K	Picture Tube Grid
R32	2.2 Meg. 20%	½		BTS-2.2 Meg.	Sync. Limiter Grid
R33	33KΩ	½		BTS-33K	Sync. Limiter Plate
R34	100KΩ 20%	½		BTS-100K	Sync. Limiter Plate
R35	18KΩ	½		BTS-18K	Sync. Coupling
R36	82Ω	½			Sound IF Cathode
R37	15KΩ	½			Sound IF Screen
R38	680Ω 20%	½		BTS-680	Sound IF Plate Decoupling
R39	680Ω 20%	½		BTS-680	Voltage Divider
R40	220Ω 20%	½			Balancing
R41	47KΩ 20%	½		BTS-47K	De-emphasis
R42	6800Ω	½		BTS-6800	Ratio Det. Diode Load
R43	4.7 Meg.	½		BTS-4.7 Meg.	AF Amp. Grid
R44	270KΩ	½		BTS-270K	AF Amp. Plate
R45	100KΩ 20%	½		BTS-100K	Output Grid
R46	180KΩ 5%	½		BTS 180K-5%	Voltage Divider
R47	330KΩ 5%	½		BTS 330K 5%	Voltage Divider
R48	22KΩ	½		BTS-22K	Integrator Network
R49	8200Ω	½		BTS-8200	Integrator Network
R50	8200Ω	½		BTS-8200	Integrator Network
R51	100KΩ	½		BTS-100K	Vert. MV Grid
R52	30KΩ	2		BT-2-33K	Vert. MV Feedback-See Note 2
R53	1.2 Meg.	½		BTS-1.2 Meg.	Vert. MV Plate-See Note 3
R54	22KΩ	½		BTS-22K	Vert. MV Feedback
R55	8200Ω	½		BTS-8200	Vert. Peaking
R56	3300Ω	½		BTS-3300	Vert. Amp. Cathode
R57	20KΩ	10		AB-20K	Horiz. Output Grid See Note 4 Wire Wound
R58	500KΩ	1		BTA-470K	Horiz. Output Grid
R59	100Ω 20%	½			Parasitic Supp.
R60	2200Ω	1		BTA-2200	Horiz. Output Screen
R61	12.5KΩ	10		AB-1250	Horiz. Output Screen-Wire Wound
R62	3000Ω	25		KP-3000	Damper Filter-Wire Wound
R63	500Ω 20%	½		BTS-470	Acc. Anode Load
R64	500KΩ 20%	1			HV Filter
R65	1500Ω 20%	1		BTA-1500	Focus Coil Shunt
R66	1500Ω 20%	1		BTA-1500	Focus Coil Shunt
R67	30KΩ	10			Bleeder-Wire Wound-See Note 5

Note 1. Some models use 1.2 Meg. resistor in this application.
Note 2. Not used in 10" and 12" chassis under serial No. 36000 and 16" chassis under serial No. 25969.
Note 3. Some models use 1.5 Meg. resistor in this application.
Note 4. Some models use two 30KΩ, 2 watt resistors in parallel to obtain required resistance and wattages.
Note 5. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MUNTZ PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ 1.5A	740VCT @ .170ADC	5VAC @ 3A	6.3VAC @ 6A; SEC. 4: 6.3VAC @ .75A	TP-0015-C	P-8159 *	P-3059	TP-370 *

* Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: MUNTZ PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	390Ω Tap @ 165Ω	10.6Ω Tap @ .6Ω; SEC. 2: 0Ω	TO-0017-A	A-8128	HVO-3	TFB-3	Hor. Output Trans.
T3	600Ω	7.8Ω	TO-0016-A	A-8116	A-3036	TSO-1 *	Vert. Output Trans.
T4A	13.5Ω		LC 0046	DY-1	MD-1		Hor. Deflection Coil
B	64Ω						Vert. Deflection Coil
T5	275Ω		LC-0045	FC-10	MF-1		Focus Coil

* Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MUNTZ PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T6	4.9KΩ	3.4Ω	640Ω	.9Ω	TO-0015	A-3849	A-3019	RO-9 ¶	¶ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: MUNTZ PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	PM	3.4Ω	SK-0012	ST-107 MOD. P5-V	5A07	
	CONE DIA.	V. C. DIA.				
SP2	4 1/2"	9/16"				

COILS (RF-IF)

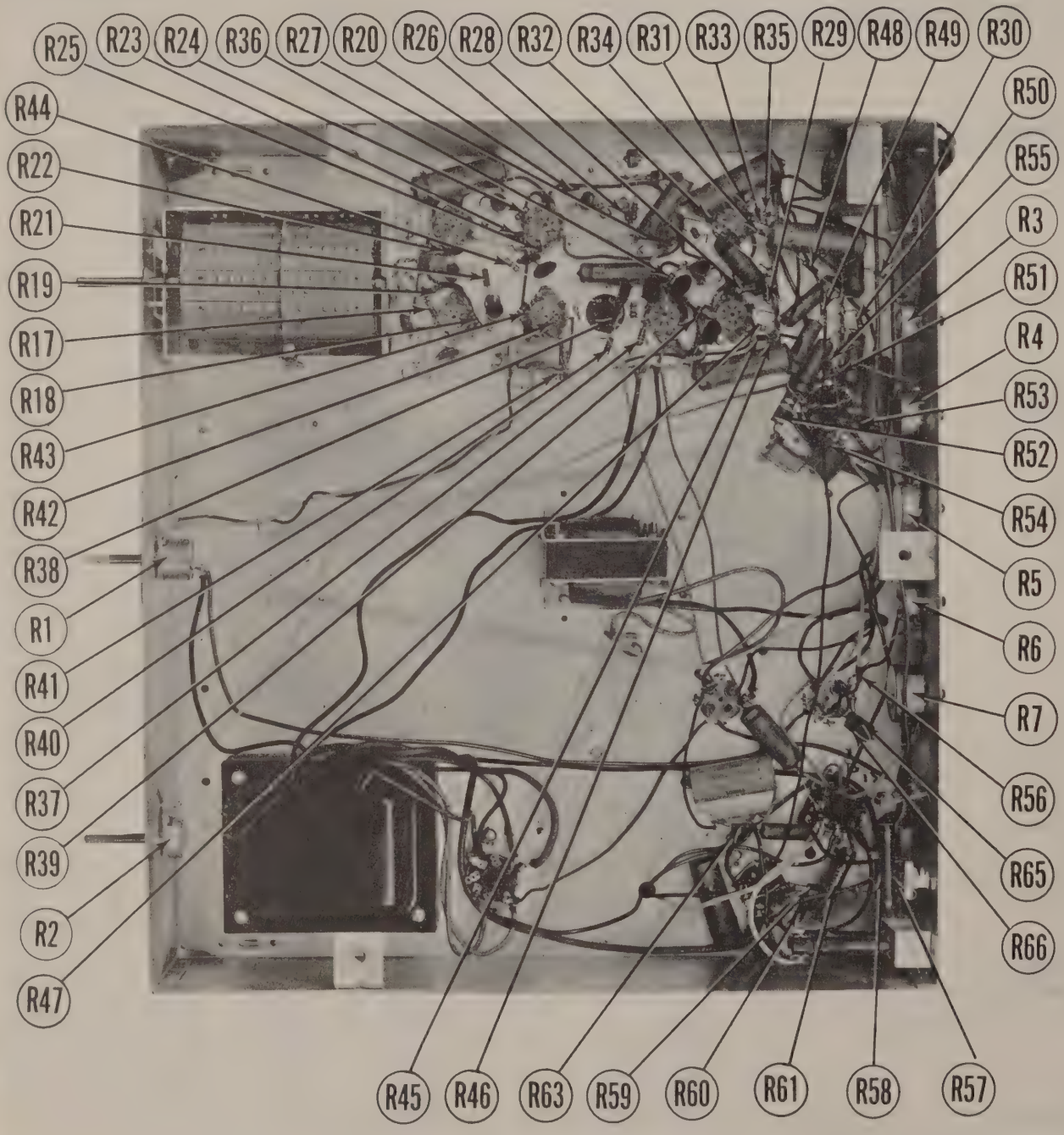
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MUNTZ PART No.	REPLACEMENT DATA: MEISSNER PART No.	NOTES
L1	Ant. Coil	0Ω	0Ω			Part of tuner, part No. PR-156
L2	RF Plate, Mixer Grid, & Osc. Coil	0Ω				Part of tuner, part No. PR-156
L3	Fil. Choke	0Ω				Part of tuner, part No. PR-156
L4	Fil. Choke	0Ω				Part of tuner, part No. PR-156
L5	1st Video IF	.2Ω				Part of tuner, part No. PR-156
L6	Sound Trap	0Ω	0Ω	LO-34		
L7	2nd Video IF	.2Ω	.2Ω	LI-42		
L8	3rd Video IF	.2Ω	.2Ω	LI-41		
L9	4th Video IF	.2Ω	.2Ω	LI-40		
L10	Peaking	9.8Ω		LC-38	19-1921 †	170 microhenries. Wound on 39KΩ resistor
L11	Peaking	16Ω		LC-41	19-1923	400 microhenries. Yellow identification dot
L12	Peaking	13Ω		LC-44	19-1922#	280 microhenries. Wound on 22KΩ resistor
L13	Peaking	16Ω		LC-41	19-1923	400 microhenries. Yellow identification dot
L14	Sound IF	11Ω		LO-33		Tapped at 7.5Ω
L15	Ratio Det. Trans.	4Ω	.2Ω	LI-44		
L16	Horiz. Lin.	19Ω		LR-19		
L17	Horiz. Size	.5Ω		LR-18		
L18	RF Coil	.2Ω		LC-43		

† Add 39KΩ resistor in parallel.
# Add 22KΩ resistor in parallel.

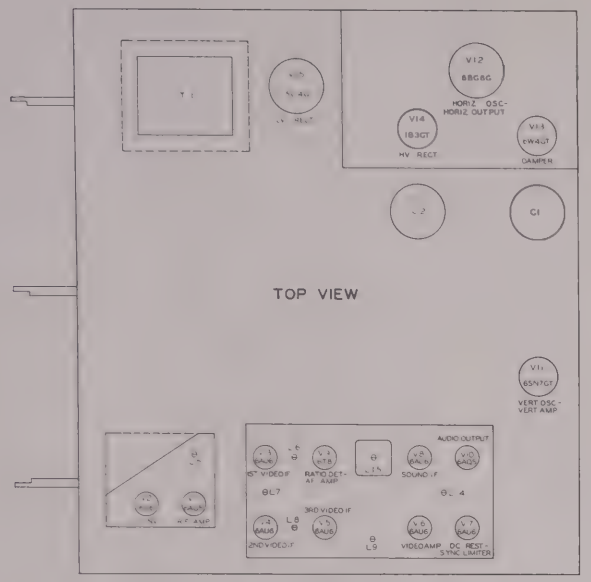
MISCELLANEOUS

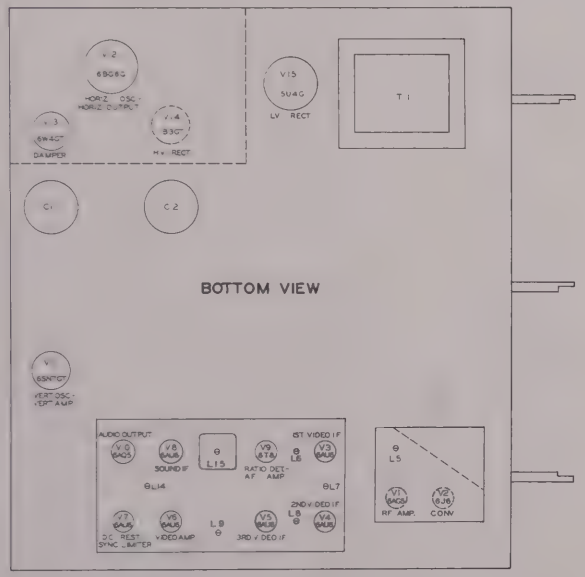
ITEM No.	PART NAME	MUNTZ PART No.	NOTES
M1	RF Tuner	PR-152	
M2	Video Det.	CX-27	
M3	Fuse	FU-02	.25A 250V
M4	Trimmer	CT-9	Horiz. hold
M5	Trimmer	CT-9	Horiz. drive
M6	Ion Trap		

MUNTZ
MODEL M-169



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION





TUBE PLACEMENT CHART

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold trimmer (B1) until the picture synchronizes horizontally.

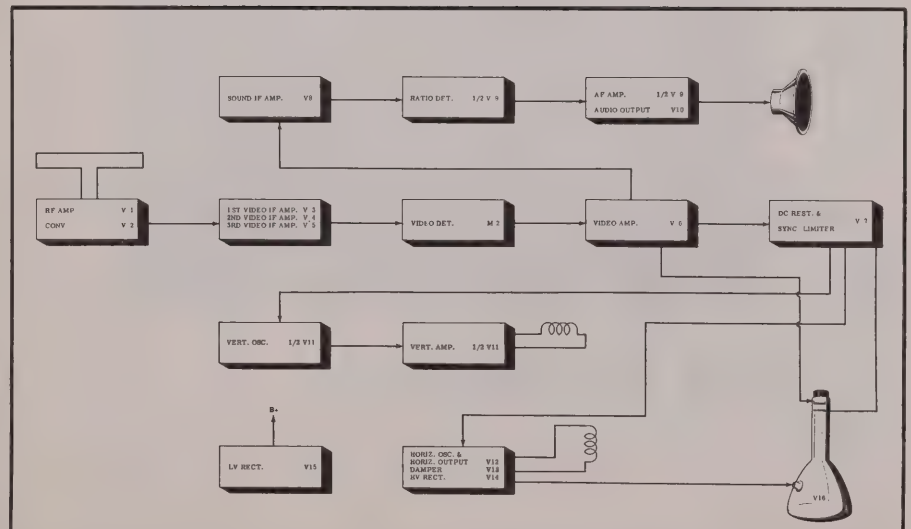
Adjust the horizontal drive trimmer (B2) clockwise as far as possible without distorting the picture.

Adjust the width slug (B3) until the picture is of proper size horizontally.

Adjust the horizontal linearity slug until the picture is symmetrical from left to right. Readjustment of B2 may be necessary to obtain optimum results.

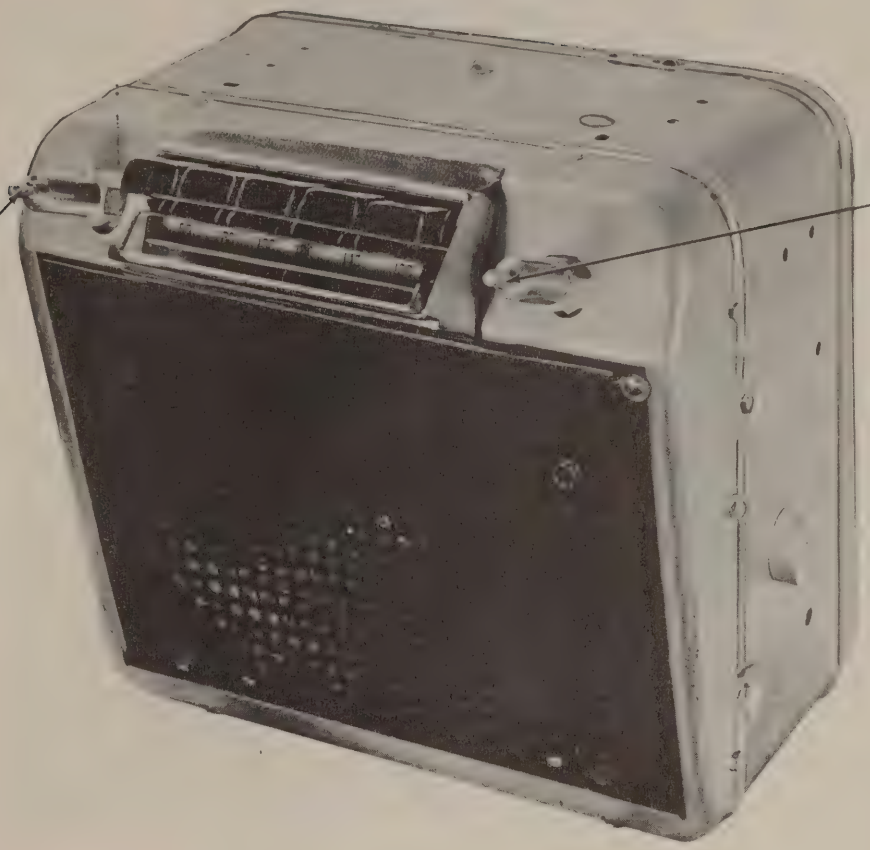
DISASSEMBLY INSTRUCTIONS

1. Remove three control knobs by loosing set screws with allen wrench.
2. Remove five screws holding rear cover. Remove cover.
3. Disconnect speaker plug at chassis.
4. Remove three screw head bolts holding chassis. Remove chassis.
5. Remove three screws holding speaker. Remove speaker.


SOUND IF AMP. V8
RATIO DET. 1/2 V 9
AF AMP. 1/2 V 9
AUDIO OUTPUT V10
RF AMP V 1
CONV V 2
1ST VIDEO IF AMP. V 3
2ND VIDEO IF AMP. V 4
3RD VIDEO IF AMP. V 5
VIDEO DET. M 2
VIDEO AMP. V 6
DC REST. & SYNC LIMITER V 7
VERT. OSC. 1/2 V11
VERT. AMP. 1/2 V11
B+
LV RECT. V15
HORIZ. OSC. & HORIZ. OUTPUT V12
DAMPER V13
HV RECT. V14
V16

BLOCK DIAGRAM

OLDSMOBILE
MODELS 982544, 982573



OLDSMOBILE
MODELS 982544, 982573

OLDSMOBILE MODEL 982544

TRADE NAME	Oldsmobile, Models 982544, 982573
SUPPLIER	Oldsmobile Motors, Div. of General Motors Corp., Lansing, Michigan
TYPE SET	Battery Operated Custom Built Automotive Superheterodyne Receiver
TUBES (SEVEN)	Types 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SR7 DET-AVC-AF, (2) 6V6GT Power Output, 0Z4 Rectifier
POWER SUPPLY	6 Volts Storage Battery — RATING 6.9 Amp. at 6 Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (Grid) of 6SA7 (V2). Low side to chassis.	260KC (400 ∿ Mod)	Turn tuning gang to the high frequency stop.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	68MMF	High side to antenna connector. Low side to chassis.	1615KC	"	"	A5, A6, A7	Check the position of the oscillator slug. The slotted end of the slug shoud should be 1 25/32 inches from the mounting end of the coil. Adjust A5, A6, and A7 for maximum output.
3.	68MMF	"	1000KC	Tune for max. output	"	A8, A9	Adjust for maximum output. Set the pointer to 1000 by means of the pointer adjustment screw. Repeat steps 2 and 3 until no further improvement can be made.

AFTER SET HAS BEEN INSTALLED, FULLY EXTEND THE ANTENNA AND TUNE IN A WEAK STATION NEAR 1400KC. ADJUST A7 FOR MAXIMUM VOLUME.

PUSHBUTTON SET-UP

Pull pushbutton to the left and out. Tune in desired station manually. Push button all the way in.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

OLDSMOBILE
MODEL 982544

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OLDSMOBILE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	7237751	6SK7	8N	
V2	Converter	7237752	6SA7	8R	
V3	IF Amp.	7237751	6SK7	8N	
V4	DET.-AVC-AF	1218107	6SR7	8Q	
V5	Power Output	1213793	6V6GT	7AC	
V6	Power Output	1213793	6V6GT	7AC	
V7	Rectifier	1211924	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: OLDSMOBILE PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	M908	AFH44I4A			EL-422	■ Filter
B	20	400						▲ Filter
C	20	25						Output Cathode Bypass
C2	100	500	G101	1468-0001	D6-101	GP1K-100	1FM-31	RF Coupling
C3	.05	200	E503	P288-05			TM-15	AVC Filter
C4	39	300	G390	1468-00004	D6-390	GP1K-39	1FM-44	RF Coupling
C5	39	300	G390	1469-00004	D2-39	GP1K-39	MS-44	Fixed Trimmer
C6	180		7257424	CN180JN150		N150-334-180		Fixed Trimmer
C7	.05	400	E503	P488-05			TM-15	Decoupling
C8	10	300	G100	1468-00001	D6-100	GP1K-10	MS-41	IF Coupling
C9	.01	400	E103	P488-01	D6-103	821-01	TM-11	AF Amp. Cath. Bypass
C10	.002	600	E202	P688-002	D6-202	GP2M-002	TM-22	Tone Compensation
C11	.005	600	E502	P688-005	D6-502	811-005	TM-25	Tone Compensation
C12	.01	400	E103	P488-01	D6-103	821-01	TM-11	Audio Coupling
C13	.1	400	E104	P488-1			TM-1	Audio Coupling
C14	.0015	800	7236134	P1088-0015			TR-21	Output Plate Bypass
C15	.006	1600	H602	P1688-006			MB-26	Buffer

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: OLDSMOBILE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	Inf.		7259447	B13-137 *			Tone control-panel
B	300KΩ			B18-132X *			Volume control-rear, tapped @ 50KΩ
C	Shaft End			E-187 *			Attach per instructions in "Concentrikit".
D	Switch			76-2 # *			Attach per instructions in "Concentrikit".
E	Sleeve Bushing			S-5 † *			Attach per instructions in "Concentrikit".

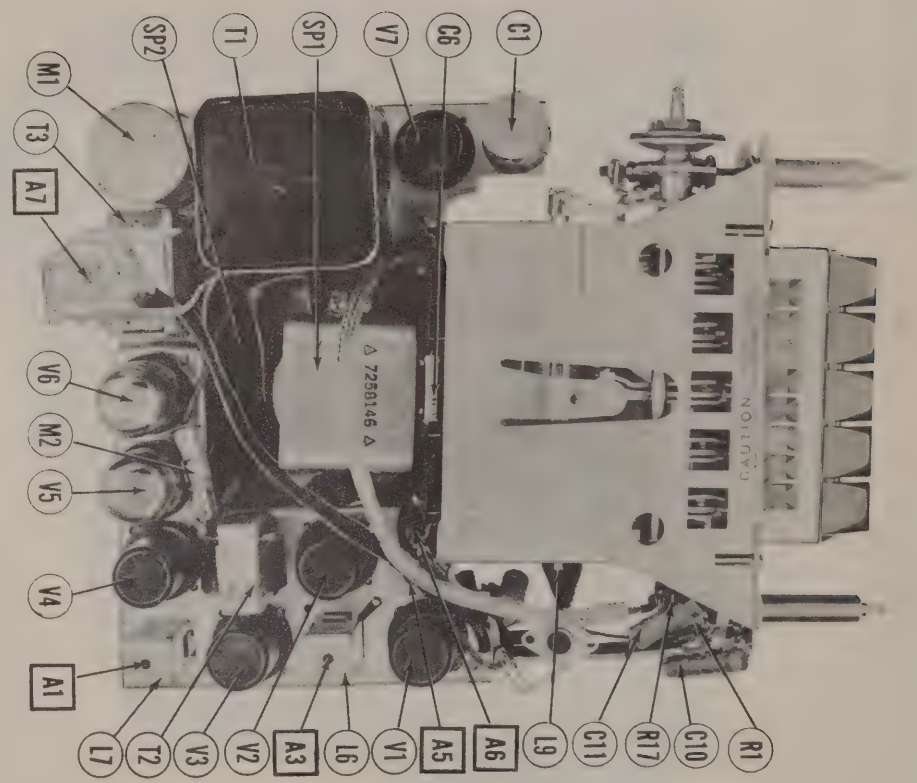
* Additional parts to be used with "Concentrikit".
# Wire switch in parallel.
† Saw off bushing to same length as original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: OLDSMOBILE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100Ω	½	A101	BW-½-100	RF Cathode
R3	15KΩ	1	B153	BTA-15K	RF Plate
R4	2.2 Meg.	½	A225	BTS-2.2 Meg.	AVC Network
R5	330KΩ	½	A334	BTS-330K	AVC Network
R6	10 Meg.	½	A106	BTS-10 Meg.	AVC Network-See Note
R7	22KΩ	½	A223	BTS-22K	Osc. Grid
R8	15KΩ	2	C153	BT-2-15K	Screen Dropping
R9	1 Meg.	½	A105	BTS-1 Meg.	AVC Network
R10	100Ω	½	A101	BW-½-100	IF Cathode
R11	1 Meg.	½	A105	BTS-1 Meg.	Diode Load
R12	47KΩ	½	A473	BTS-47K	Diode Filter
R13	1 Meg.	½	A105	BTS-1 Meg.	AF Amp. Grid
R14	1000Ω	½	A102	BTS-1000	AF Amp. Cathode
R15	1000Ω	½	A102	BTS-1000	AF Amp. Cathode
R16	820KΩ	½	1214561	BTS-820K	Tone Compensation
R17	39KΩ	½	A393	BTS-39K	Tone Compensation
R18	27KΩ	1	B273	BTA-27K	AF Amp. Plate
R19	330Ω	1	B331	BW-1-330	Output Cathode-Wire Wound
R20	1800Ω	2	*	BW-2-1800	Filter-Wire Wound
R21	220Ω	1	B221	BW-1-220	Hash Suppression

* Replace with a 2700Ω, 2 watt resistor, part no. C272 in parallel with one 5600Ω, 1 watt ressitor, part no. B562.
Note. Not used in models with serial numbers above 44678.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	OLDSMOBILE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6V ⓐ 4.6A	590VCT .064ADC			7255881	P-4065 ①	P-4076 ①	

① Drill new mounting holes.

(DRIVER) CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	OLDSMOBILE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
T2		1.6KΩ CT	7.5 Henries CT	7258941			RO-303	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLDSMOBILE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T3	9.6KΩ CT	3.9Ω	365Ω CT	.2Ω	7259419	A-3823 ②	A-2904 ②	RO-16 ②	② Bend mounting tabs down and drill or file chassis to fit.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			OLDSMOBILE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.9Ω	7258146	ST-810 MOD. P69-V	69A2	
	CONE DIA.	V. C. DIA.				
SP2	6 1/8" x 9"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	OLDSMOBILE PART No.	MEISSNER PART No.	
L1	Ant. Hash Choke	1Ω		7255738		
L2	Ant. Hash Choke	5Ω		7240251		
L3	Ant. Coil	10Ω		7258914		
L4	RF Plate	10Ω		7258914		
L5	Osc. Coil	5Ω	1.5Ω	7259687		
L6	1st IF	52Ω	52Ω	1219508		
L7	2nd IF	50Ω	50Ω	1219509		
L8	Hash Choke	0Ω		1217846		
L9	Hash Choke	0Ω		7258434		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				Oldsmobile PART No.	AEROVOX PART No.	RADIART PART No.	
M1	Int.	6V	115 ~	8542	A-100 *	5301	* Change buffer cap. to .005

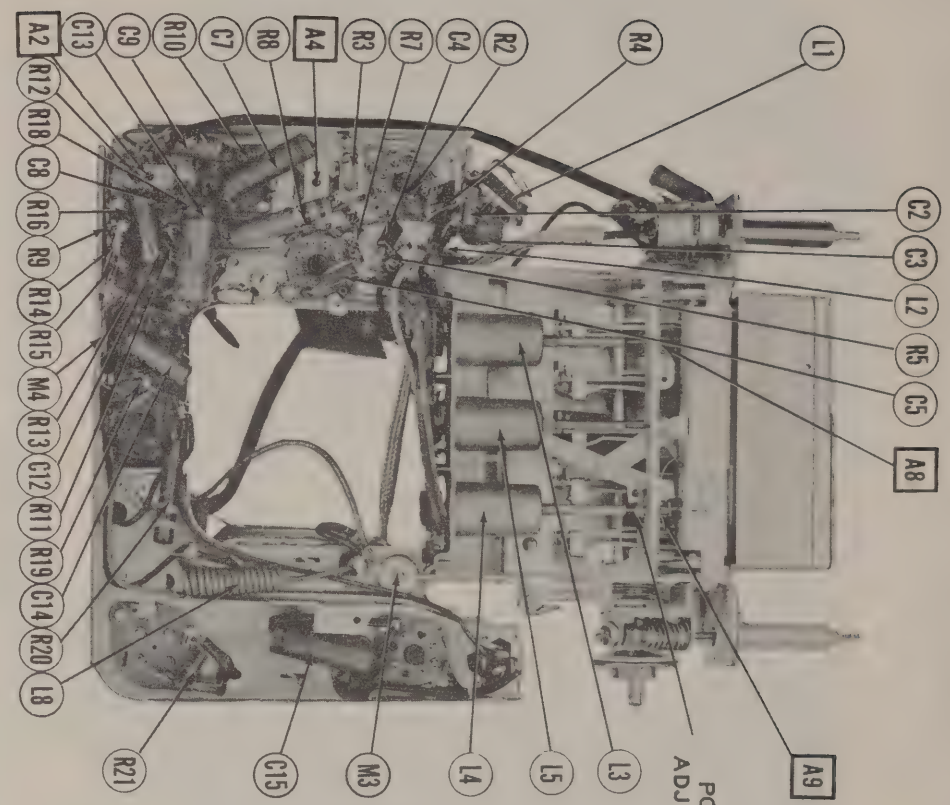
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					OLDSMOBILE PART No.		
M2	Bayonet	6-8	.25	Blue	187189		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	OLDSMOBILE PART No.	NOTES
M3	Spark Plate	1212278	
M4	Spark Plate	1217848	
M5	Fuse	120151	15 Amp.
A5	Dual Trimmer	7242454	Osc. Adj.
A6			RF Adj.
A7	Trimmer	7258160	Ant. Adj.
	Dial	7259430	
	Pointer Assembly	7257898	

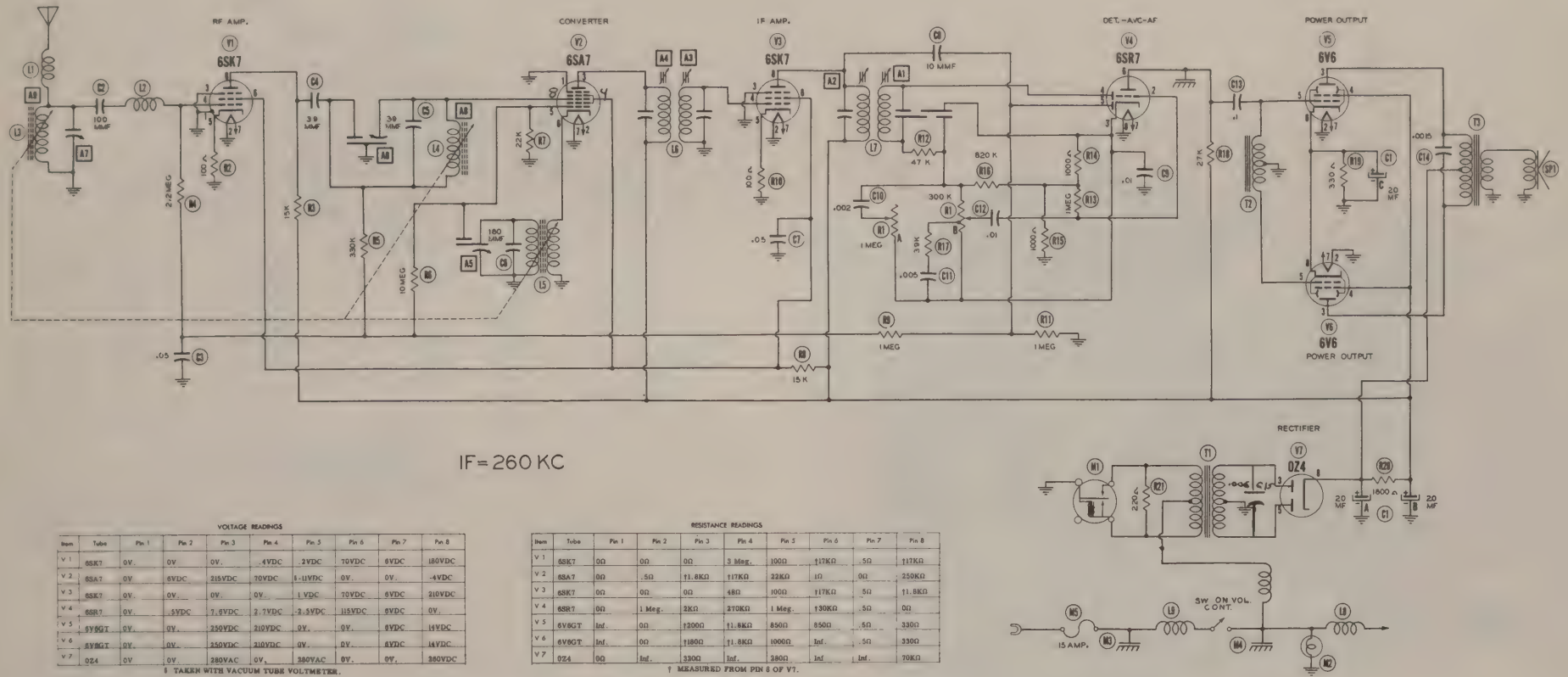
CHASSIS—BOTTOM VIEW



SET 96 FOLDER 7

OLDSMOBILE MODEL 982544

OLDSMOBILE MODEL 982544



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7	0V.	0V	0V.	.4VDC	.2VDC	70VDC	6VDC	180VDC
V 2	6SA7	0V	6VDC	215VDC	70VDC	8-11VDC	0V.	0V.	-4VDC
V 3	6SK7	0V.	0V.	0V.	0V.	1 VDC	70VDC	6VDC	210VDC
V 4	6SR7	0V.	.5VDC	7. 6VDC	2. 7VDC	2.5VDC	115VDC	6VDC	0V.
V 5	6V6GT	0V.	0V.	250VDC	210VDC	0V.	0V.	6VDC	14VDC
V 6	6V6GT	0V.	0V.	250VDC	210VDC	0V.	0V.	6VDC	14VDC
V 7	0Z4	0V	0V.	280VAC	0V.	280VAC	0V.	0V.	280VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7	0Ω	0Ω	0Ω	3 Meg.	100Ω	†17KΩ	.5Ω	†17KΩ
V 2	6SA7	0Ω	.5Ω	†1. 8KΩ	†17KΩ	22KΩ	1Ω	0Ω	250KΩ
V 3	6SK7	0Ω	0Ω	0Ω	48Ω	100Ω	†17KΩ	5Ω	†1. 8KΩ
V 4	6SR7	0Ω	1 Meg.	2KΩ	270KΩ	1 Meg.	†30KΩ	.5Ω	0Ω
V 5	6V6GT	Inf.	0Ω	†200Ω	†1. 8KΩ	850Ω	850Ω	.5Ω	330Ω
V 6	6V6GT	Inf.	0Ω	†180Ω	†1. 8KΩ	1000Ω	Inf.	.5Ω	330Ω
V 7	0Z4	0Ω	Inf.	330Ω	Inf.	280Ω	Inf	Inf.	70KΩ

† MEASURED FROM PIN 8 OF V7.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

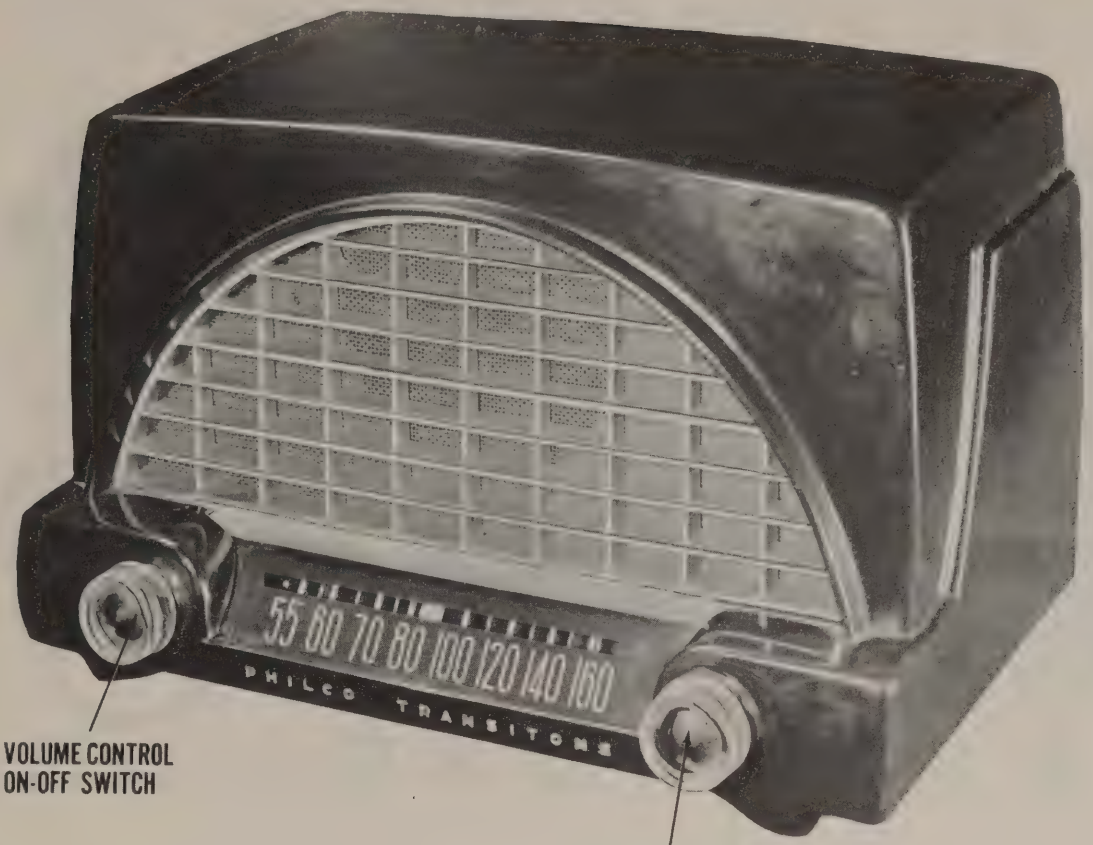
A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1950

96-7

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHILCO MODELS
50-522, 50-522-I, 50-524, 50-526



PHILCO MODELS
50-522, 50-522-I, 50-524, 50-526

PHILCO MODEL 50-526

TRADE NAME	Philco, Models 50-522, 50-522-I, 50-524, 50-526
MANUFACTURER	Philco Corp., Tioga and "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 7A8 Converter, 12BA6 IF Amp., 14B6 DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC — RATING .25 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning gang fully closed and set the pointer to the notch on the lower left hand end of the dial backplate.

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position as chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on rear section of tuning gang. Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully closed	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1600KC	Turn pointer to the notch on lower right hand end of dial backplate.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1500KC	Tune for max. output.	"	A6	"

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	Converter	7A8	7A8	8U	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET.-AVC-AF	14B6	14B6	8W	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	30	150	30-2573	PRSA864D			TA-303	Filter-Orange
B	25	150						Filter-Blue
C	20	150						Filter-Red
C2	47		60-00515307	GP47M	D6-470	GP1K-47	1FM-45	Osc. Grid Cap.
C3	10		30-1224-26	CN10JNPO	D6-100	NPOK-10	MS-41	Fixed Trimmer-See Note
C4	.003	600	61-0109	P688-003	D6-302	GP2M-003	TM-23	Decoupling
C5	.1	400	61-0113	P488-1			72P52	Line Isolation
C6	.05	400	61-0122	P488-05			TM-15	AVC Filter
C7	.01	400	61-0120	P488-01	D6-103	821-01	TM-11	Audio Coupling
C8	.01	600	61-0120	P688-01	D6-103	821-01	TM-11	Audio Coupling
C9	220		62-122001001	GP220M	D6-221	GP2K-220	1FM-325	Output Grid Bypass
C10	.02	400	61-0108	P488-02			TM-12	Output Plate Bypass
C11	.04	400	45-3500-2	P488-04			TM-14	Line Filter

Note 1. Not used in all models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	33-5566-4	Q13-133	M-60-Z	B-60-S	Volume control
B	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R1A per instructions

RESISTORS

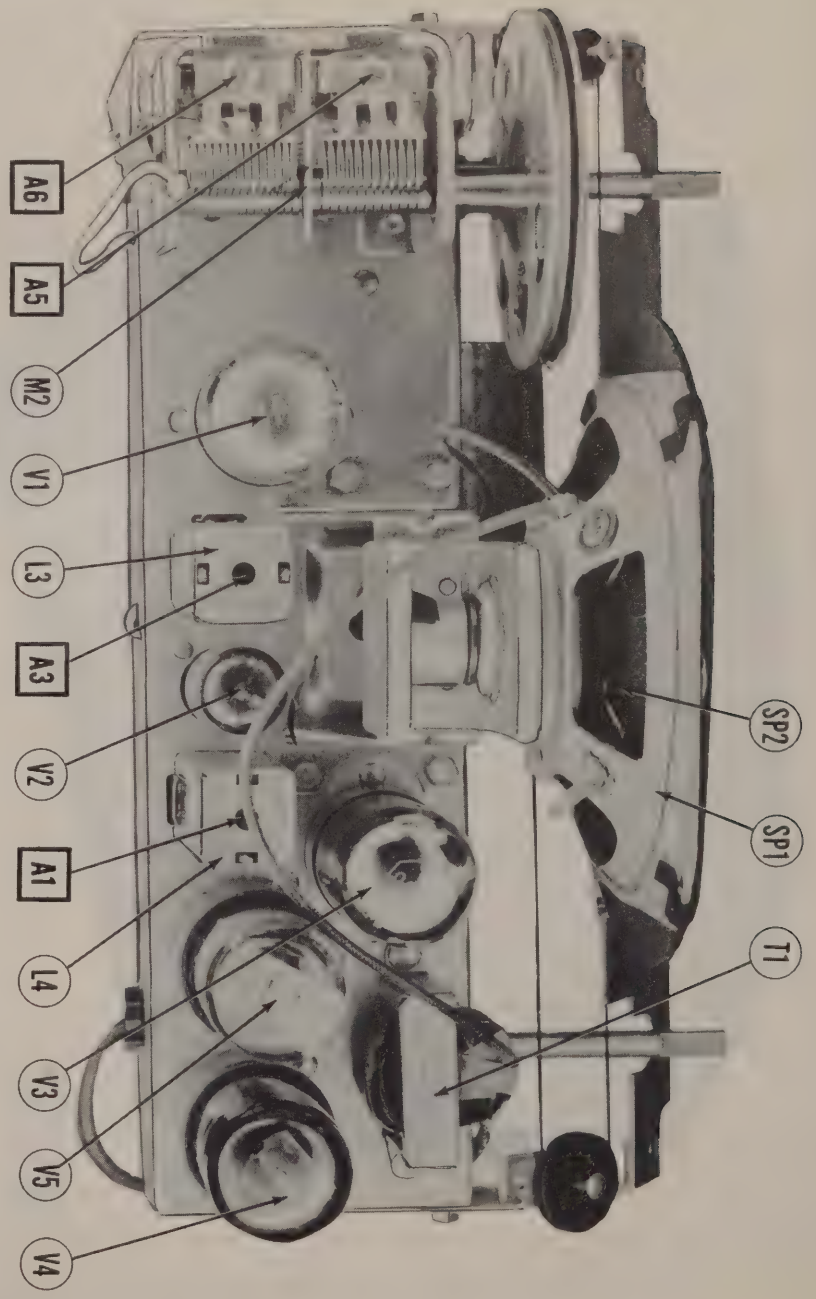
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
R2	100KΩ	½	66-4108340	BTS-100K	Osc. Grid
R3	1 Meg.	½	66-5108340	BTS-1 Meg.	IF Grid-See Notes 1 and 3
R4	68Ω	½	66-0688340	BW-½-68	IF Cathode-See Note 2
R5	39KΩ	½	66-3398340	BTS-39K	Screen Dropping
R6	47KΩ	½	66-3478340	BTS-47K	Diode Filter
R7	2.2 Meg.	½	66-5228340	BTS-2.2 Meg.	AVC Network
R8	1 Meg.	½	66-5108340	BTS-1 Meg.	Diode Load-See Note 2
R9	3.3 Meg.	½	66-5338340	BTS-3.3 Meg.	AF Amp. Grid
R10	470KΩ	½	66-4478340	BTS-470K	AF Amp. Plate
R11	470KΩ	½	66-4478340	BTS-470K	Output Grid
R12	130Ω	½	66-1134340		Output Cathode
R13	150KΩ	½	66-4158340	BTS-150K	Isolation
R14	1200Ω	½	66-2128340	BTS-1200	Filter
R15	220Ω	1	66-1224340	BW-1-220	Filter-Wire Wound

Note 1. Not used in all models.
Note 2. Not used in models 50-522, 50-522I, and 50-524.
Note 3. Models 50-522, 50-522I and 50-524 use 330KΩ resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.5KΩ	3.5Ω	200Ω	.7Ω	32-8384	A-3332	A-3025	RO-2 ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA PHILCO PART No.	VIKING PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	3.5Ω	36-1627-5	4J4	4A1	
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

R F COILS

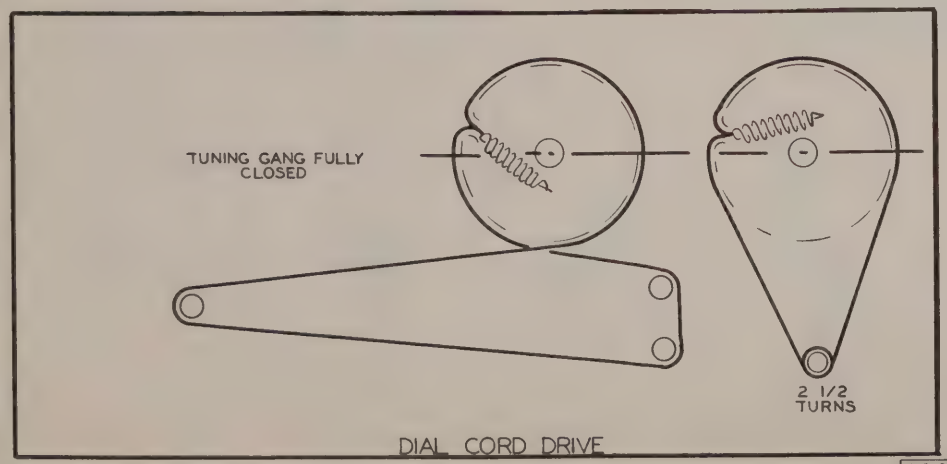
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1A	Loop Ant.	.1Ω	4.5Ω	32-4052-38		Model 50-526
B	Loop Ant.			32-4052-31		Models 50-522, 50-522I
C	Loop Ant.			32-4052-34		Model 50-524
L2	Osc. Coil	3Ω	8.5Ω	32-4263	14-1073	
L3	1st IF	22Ω	22Ω	32-4160-6A	16-6678	
L4	2nd IF	17Ω	17Ω	32-4240-38	16-6678	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	34-2068		Type #47 (Model 50-526)

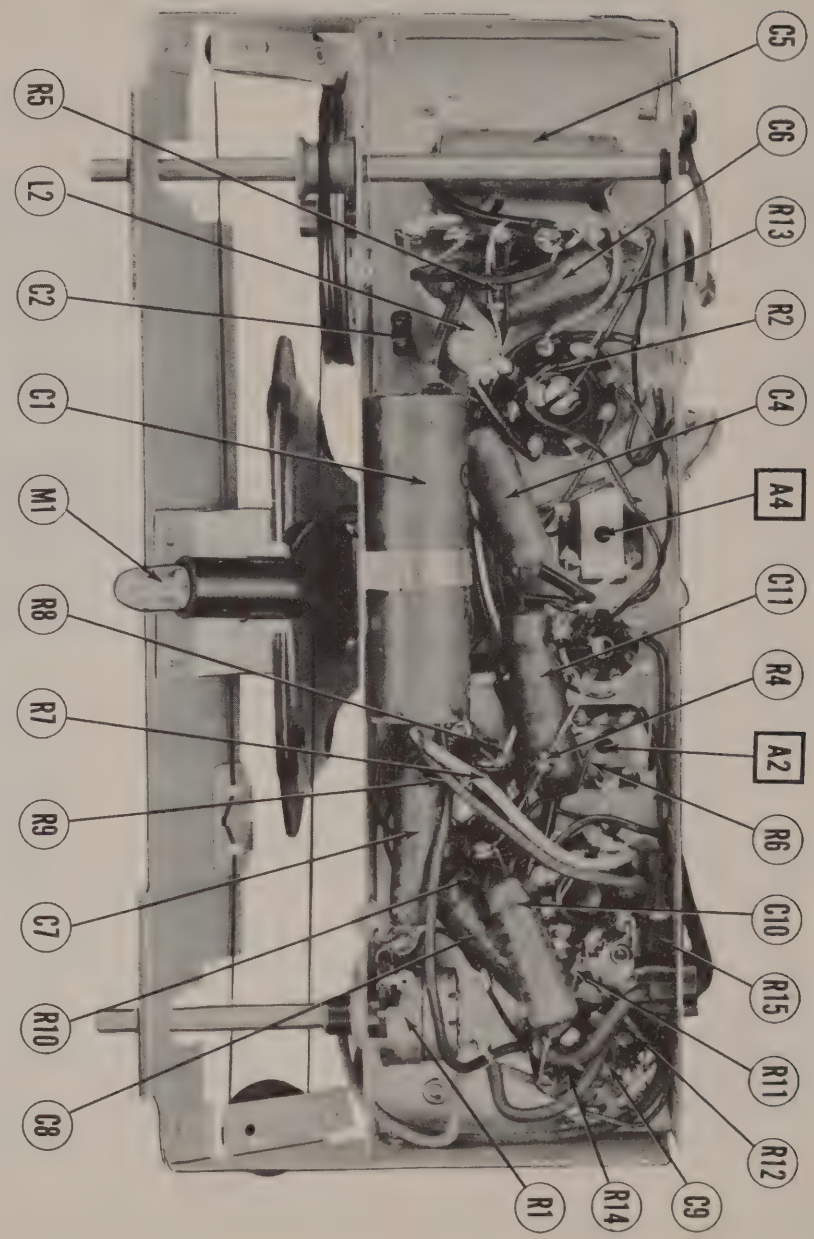
MISCELLANEOUS

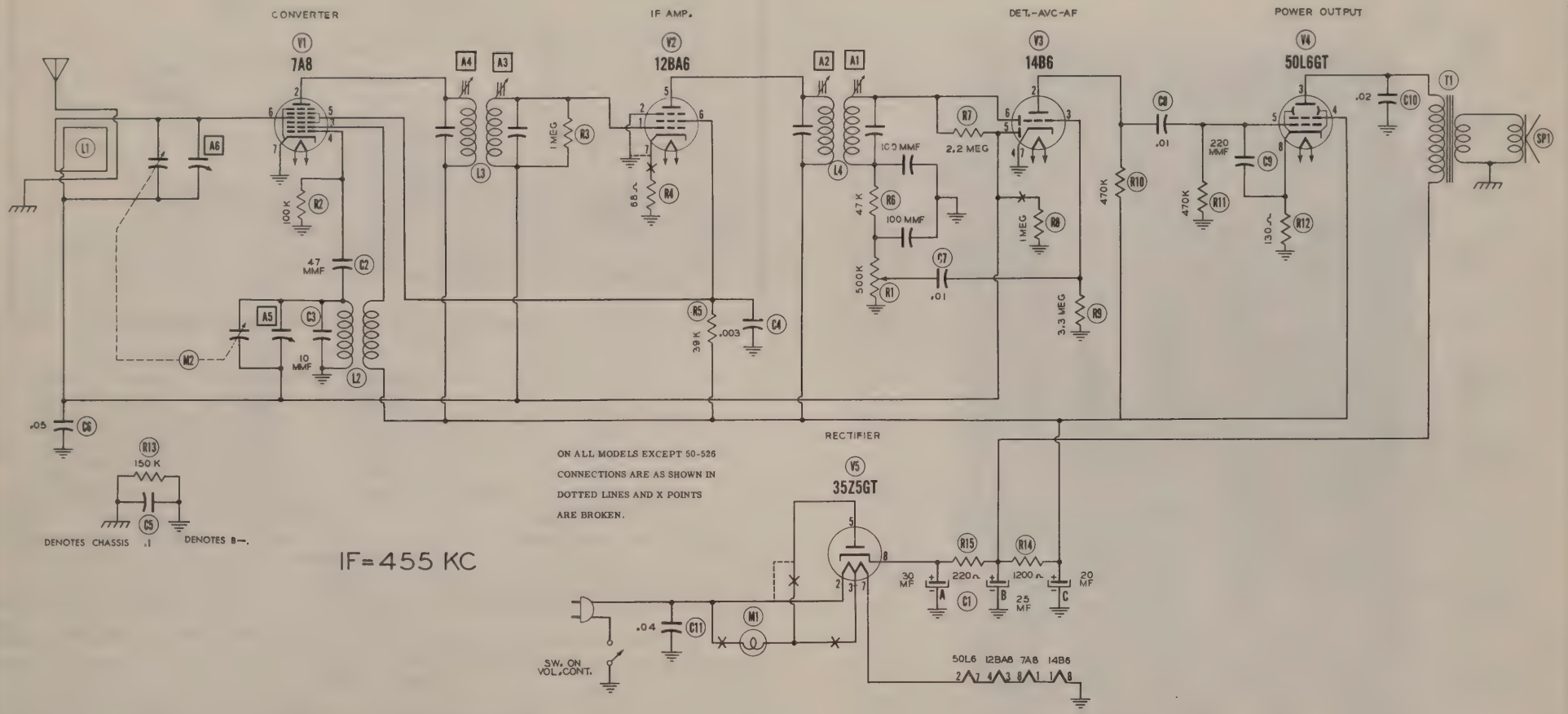
ITEM No.	PART NAME	PART No.	NOTES
M2A	2 Gang Var. Cap.	31-2727-2	(27-496MMF, 24-165MMF)
B	2 Gang Var. Cap.	31-2751	Later productions
	Dial Scale	54-5069	Model 50-526
	Knob	54-4718-2	Model 50-526
	Dial Pointer	56-5630-14	Model 50-526
	Dial Scale	54-5060	Model 50-524
	Knob	54-4674	Model 50-522
	Knob	54-4674-1	Model 50-522I
	Knob	54-4527-3	Model 50-524



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7A8	13VAC	100VDC	100VDC	6-7.6VDC	37.5VDC	-.6VDC	0V.	20VAC
V 2	12BA6	-.6VDC	0V.	20VAC	33VAC	100VDC	37.5VDC	.2VDC	
V 3	14B6	13VAC	50VDC	-.5VDC	0V.	-.5VDC	-.7VDC	0V.	0V.
V 4	50L6GT	0V.	85VAC	100VDC	100VDC	.1VDC	110VDC	33VAC	7VDC
V 5	35Z5GT	0V.	117VAC	113VAC	100VDC	113VAC	110VDC	85VAC	123VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7A8	16Ω	†1.4KΩ	†1.4KΩ	100KΩ	†40KΩ	1 Meg.	0Ω	23Ω
V 2	12BA6	1 Meg.	0Ω	23Ω	36Ω	†1.4KΩ	†40KΩ	68Ω	
V 3	14B6	16Ω	†470KΩ	3.3 Meg.	0Ω	1 Meg.	500KΩ	0Ω	0Ω
V 4	50L6GT	Inf.	86Ω	†420Ω	†1.4KΩ	470KΩ	†220Ω	36Ω	0Ω
V 5	35Z5GT	0Ω	115Ω	112Ω	†1.4KΩ	115Ω	†220Ω	86Ω	650KΩ

† MEASURED FROM PIN 8 OF V5.

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1950

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

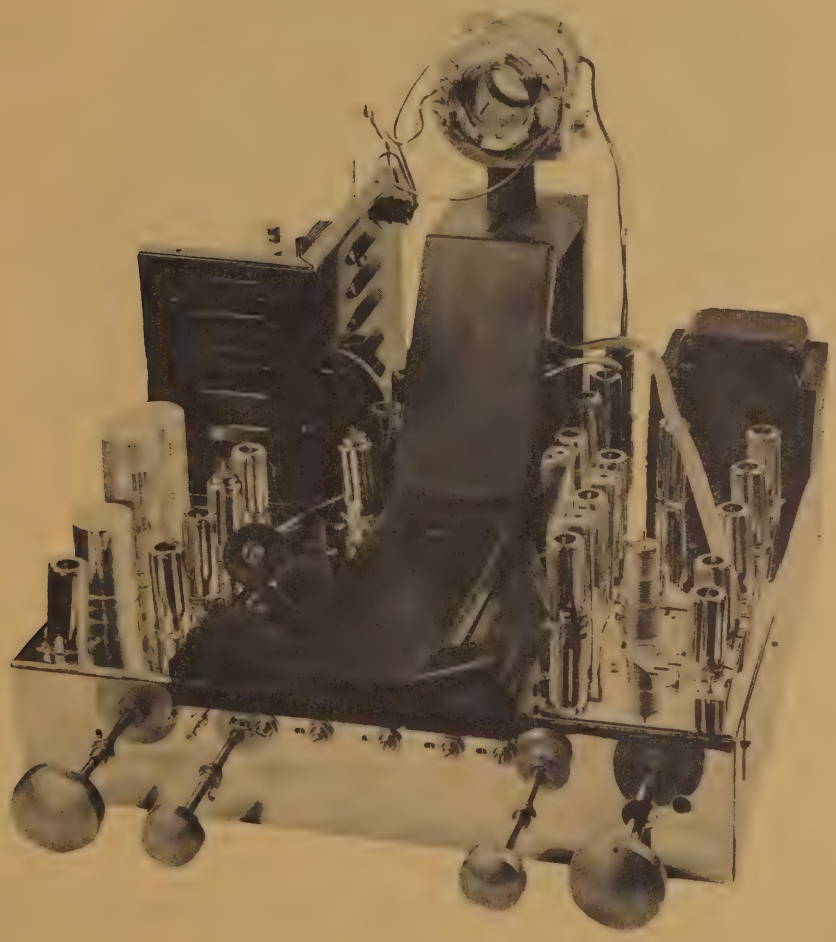
RADIO CRAFTSMAN

MODEL RC100

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



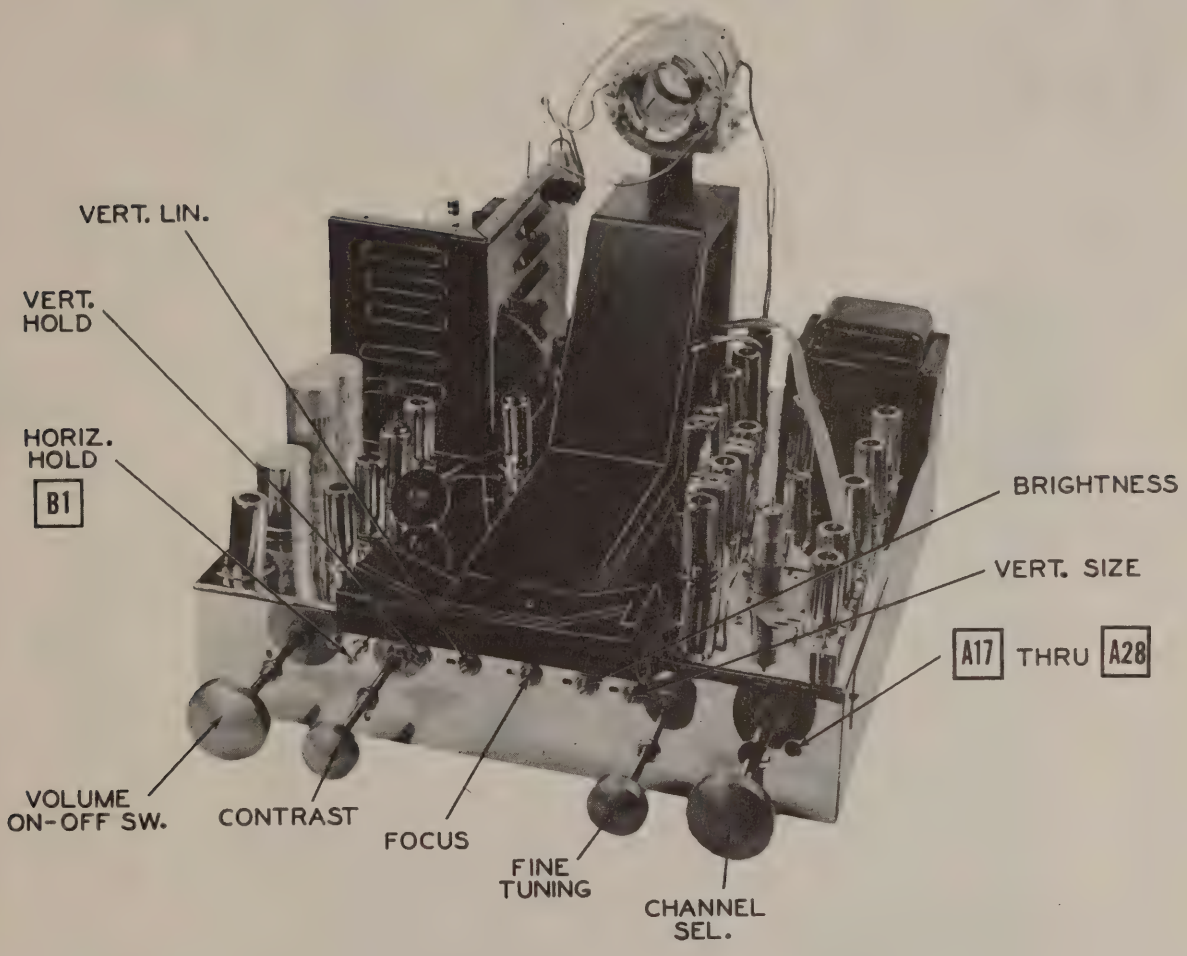
RADIO CRAFTSMAN

MODEL RC100

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

Date 5/50 Set No. 96—Folder No. 9



RADIO CRAFTSMEN
MODEL RC100

RADIO CRAFTSMAN MODEL RC100

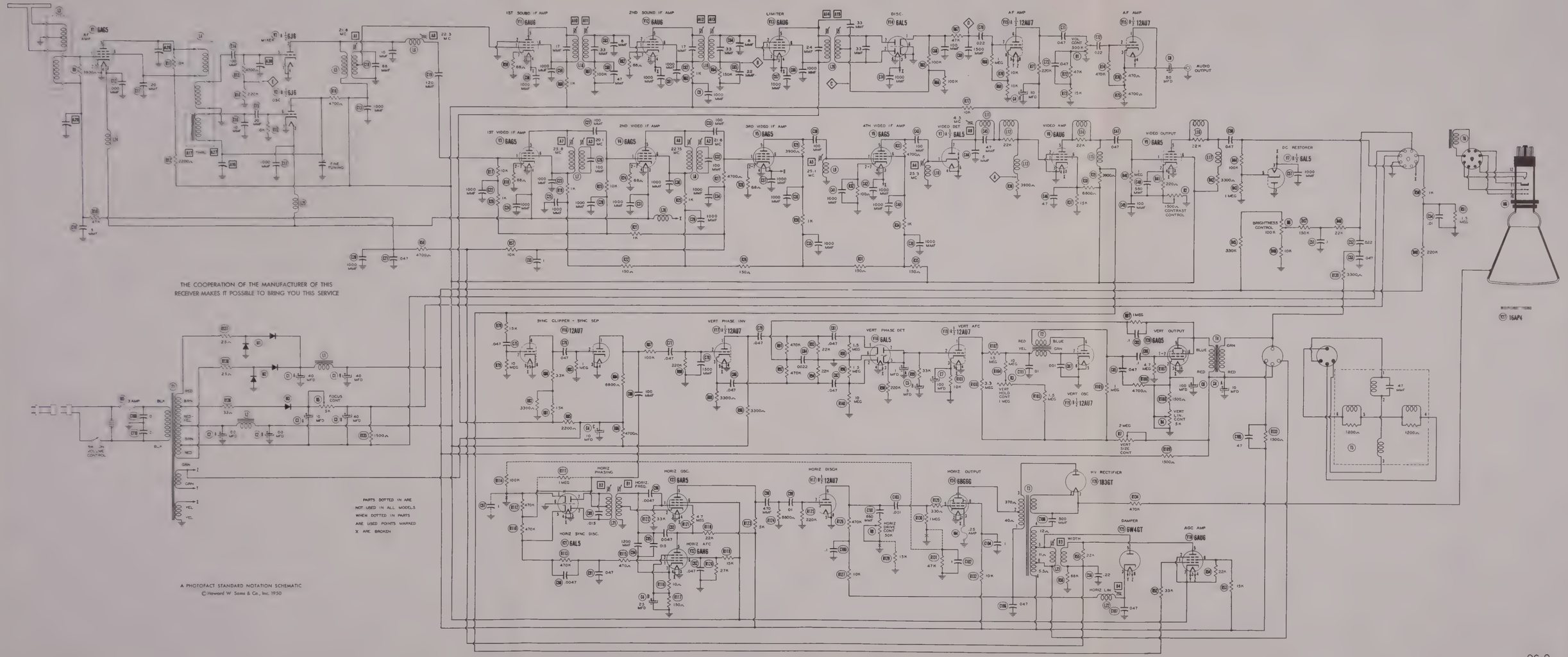
TRADE NAME	Radio Craftsman, Model RC100
MANUFACTURER	The Radio Craftsman Inc., 1341 S. Michigan Ave., Chicago 5, Illinois
TYPE SET	Television Receiver
TUBES	Twenty-Seven
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	1.7 Amp. at 117 Volts AC
TUNING RANGE—Channels 2 thru 13	

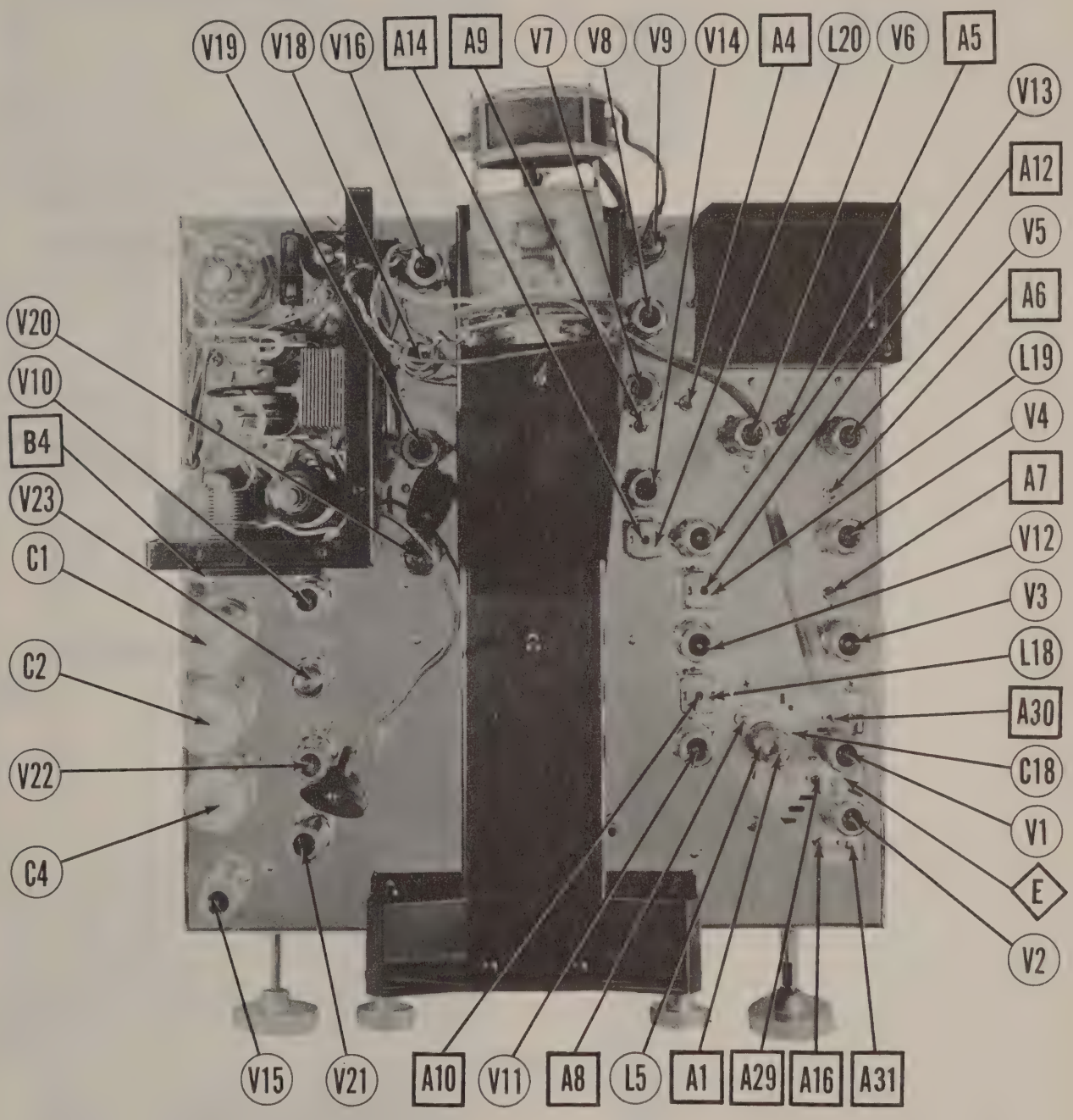
INDEX

Alignment Instructions 6, 7
Block Diagram 13
Horiz. Sweep Circuit Adjustment 13
Parts List and Description 14, 15, 16
Photographs
Capacitor Identification 11, 18
Chassis-Top View 3, 7
Photographs (continued)
RF Tuner 10
Resistor Identification 12, 17
Trans., Inductor and Alignment Identification 4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8

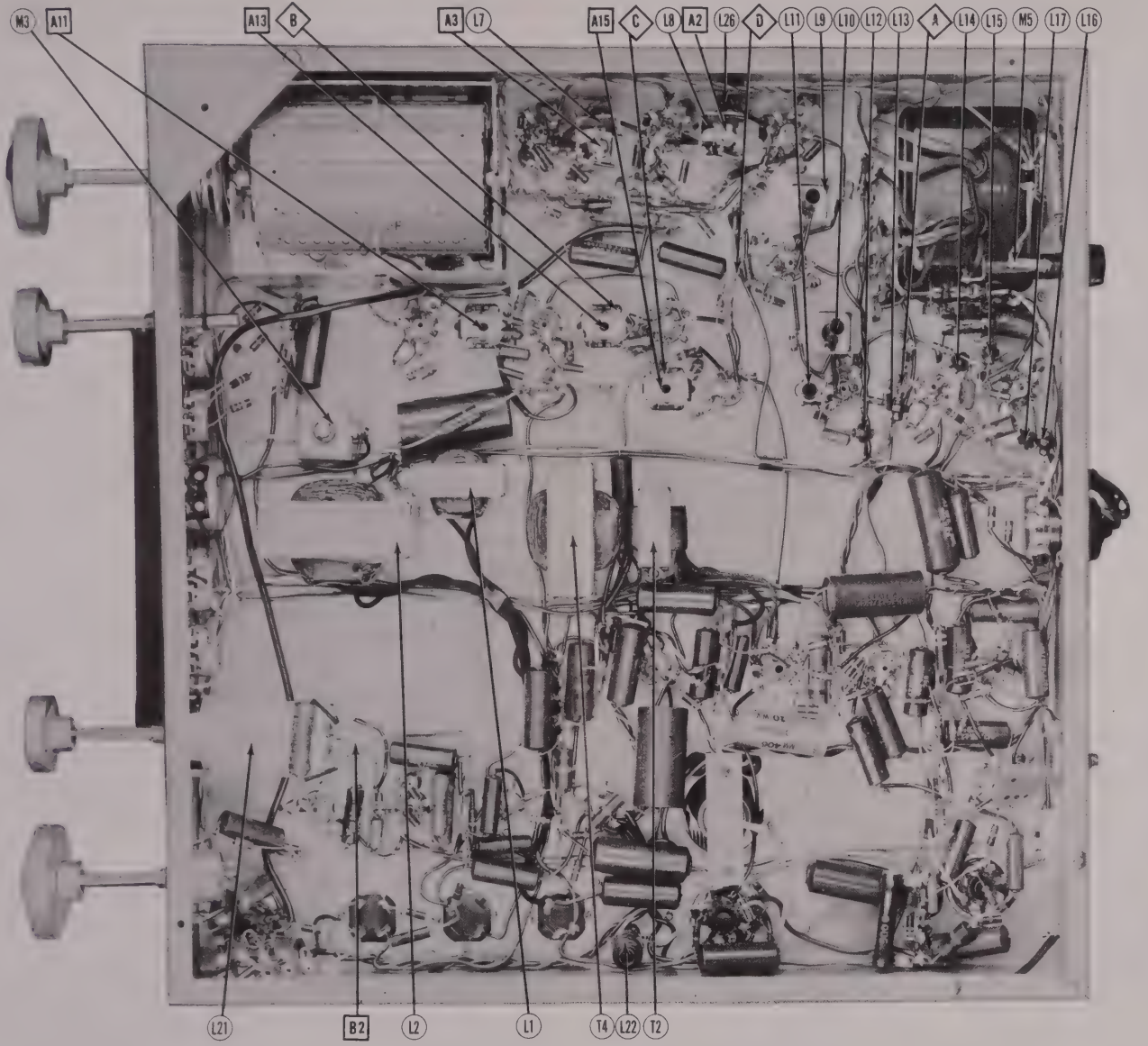
HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

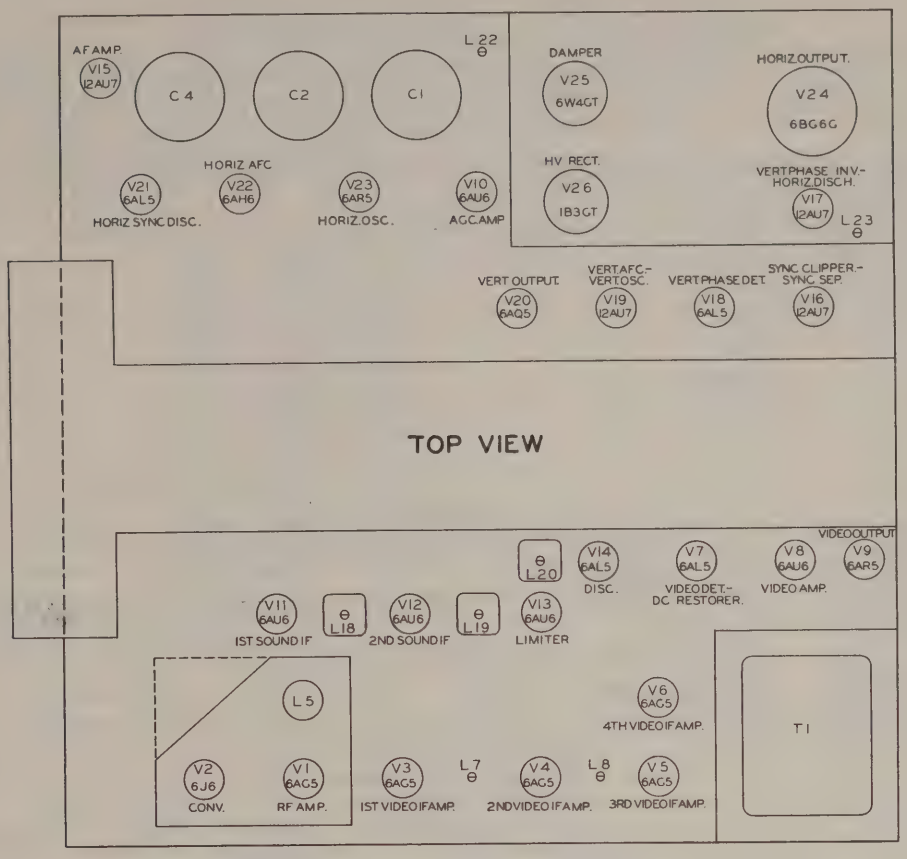

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
PARTS DOTTED IN ARE NOT USED IN ALL MODELS
WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1950
RADIO CRAFTSMEN
MODEL RC100
96-9

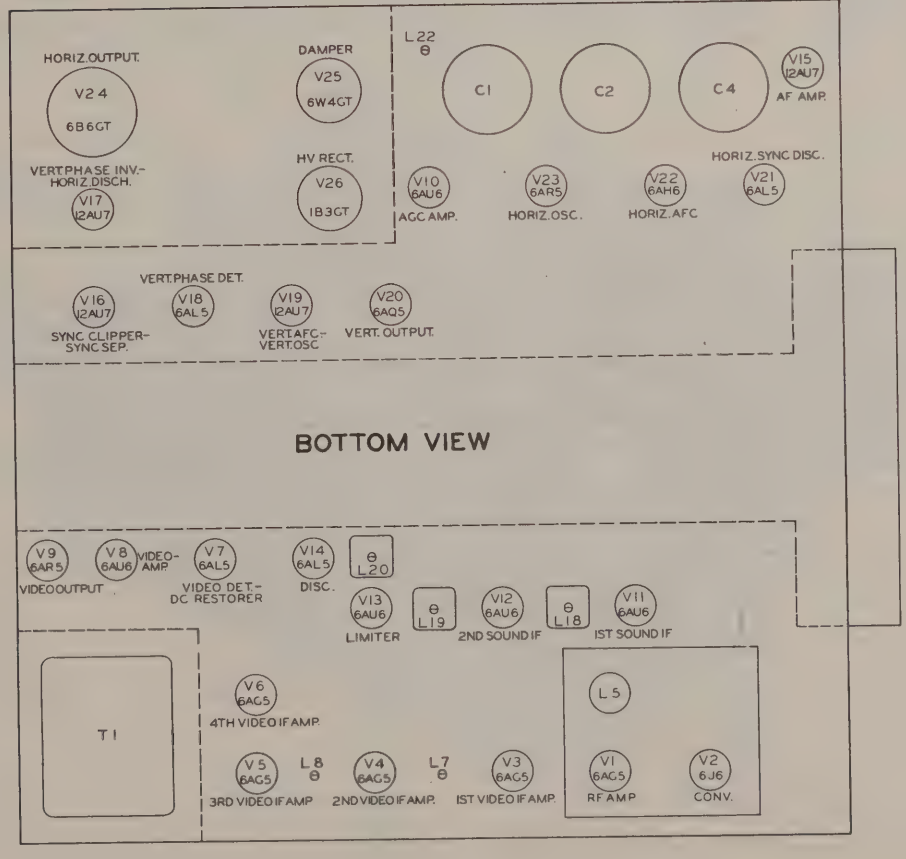


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To disable the high voltage power supply, remove the fuse M4.
Connect a 22KΩ resistor in series with the oscilloscope vertical input lead, and shunt the vertical input terminals with a 1000MMF capacitor.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and connect a fine wire to pin 5 (oscillator grid). Connect the negative lead of a 45 volt battery to the wire; connect the positive lead to chassis. Replace the tube and remove the the channel 13 segment of the converter section of the tuner turret and turn the channel switch to 13.

Remove the AGC tube (V10) from its socket. Connect the negative lead of a 3 volt battery to pin 5 of V10 socket, connect the positive lead to ground.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.005MFD	High side to point E. Low side to chassis.	21.6MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1, A2	Adjust for MINIMUM deflection.
2.	.005MFD	"	20.1MC	"	"	A3	"
3.	.005MFD	"	25.3MC	"	"	A4	Adjust for maximum deflection.
4.	.005MFD	"	25.1MC	"	"	A5	"
5.	.005MFD	"	22.75MC	"	"	A6	"
6.	.005MFD	"	25.8MC	"	"	A7	"
7.	.005MFD	"	22.3MC	"	"	A8	"
8.	.005MFD	"	4.5MC	"	"	A9	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.005MFD	High side to point E. Low side to chassis.	23MC (10MC SWP)	26.1MC 21.6MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to Fig 1. If necessary retouch A1 thru A8 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.005MFD	High side to Point E. Low side to chassis.	21.6MC (Unmod.)	Any	DC Probe to Point (B). Common to chassis.	A10, A11, A12	Adjust for maximum deflection.
11.	.005MFD	"	"	"	DC Probe to Point (C). Common to chassis.	A13, A14	"
12.	.005MFD	"	"	"	DC Probe to Point (D). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal into 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	1000MMF	High side to Point E. Low side to chassis.	21.6MC (450KC SWP)	21.6MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A10, A11, A12.	Adjust for maximum amplitude and symmetry as per Fig 2.
11.	1000MMF	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A13, A14	"
12.	1000MMF	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A15	Adjust A15 so 21.6MC marker occurs at center of crossover lines as per Fig 3. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the wire and 45 volt bias from the local oscillator tube (V2), and replace the channel 13 segment of the tuner turret.

Complete oscillator alignment may not be necessary, if the oscillator seems to be off frequency for a majority of the channels, it may be possible to correct them in one step using A16. It should be noted that this is an all channel oscillator circuit adjustment, and should not be adjusted for any individual channel. If adjustment of A16 will not bring all channels within the range of the fine tuning control, it will be necessary to adjust the individual channel oscillator adjustment for each channel that is off frequency. The individual channel oscillator adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel selector is turned to each channel.

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	Two 150Ω carbon res.	Across antenna terminals with 150Ω in each lead.	215.75MC (Unmod.)	13	DC Probe to Point (D). Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A18	
			203.75MC	11		A19	
			197.75MC	10		A20	
			191.75MC	9		A21	
			185.75MC	8		A22	
			179.75MC	7		A23	
			87.75MC	6		A24	
			81.75MC	5		A25	
			71.75MC	4		A26	
			65.75MC	3		A27	
			59.75MC	2		A28	

ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

The RF and mixer circuits in this receiver are pre-set at the factory and are normally very stable. Alignment of these circuits should not be attempted unless they are definitely known to be out of alignment.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 150Ω carbon res.	Across antenna terminals with 150Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A29, A30, A31	Adjust for response curve similar to Fig 4 with markers above 70%.
15.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"	"	Check all channels for response similar to fig 4. If markers fall below 70% on any channel, make slight adjustment of A29, A30, and A31 with selector switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

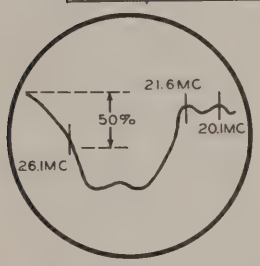


FIG.1

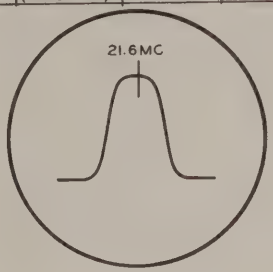


FIG. 2

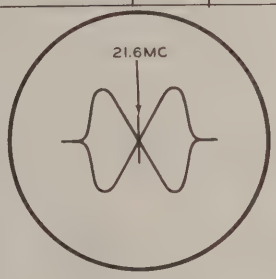


FIG. 3

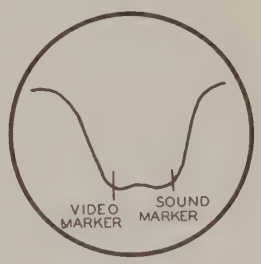
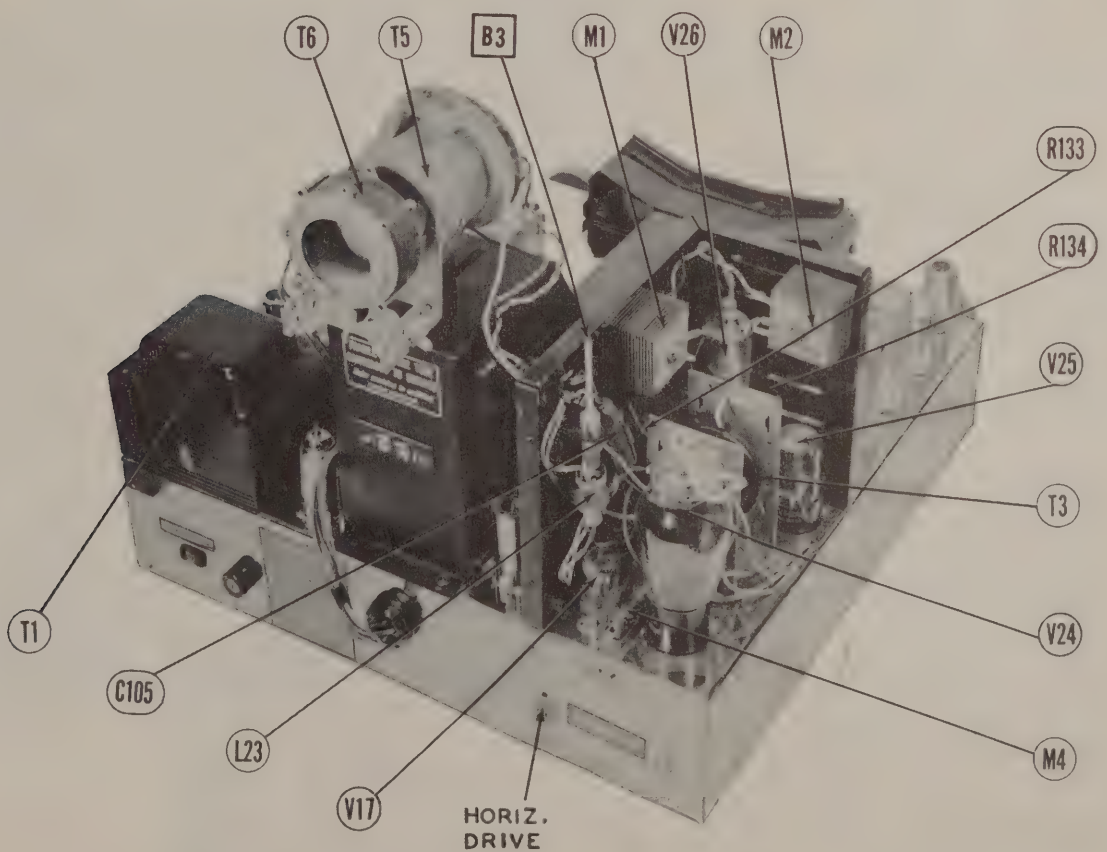


FIG.4



CHASSIS-TOP VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.6VDC	0V.	6.3VAC	0V.	125VDC	125VDC	0V.		
V 2	6J6	110VDC	160VDC	6.3VAC	0V.	-3VDC	§-6.2VDC	0V.		
V 3	6AG5	-3.2VDC	.6VDC	0V.	6.3VAC	130VDC	130VDC	.6VDC		
V 4	6AG5	-.6VDC	.6VDC	6.3VAC	0V.	130VDC	130VDC	.6VDC		
V 5	6AG5	-.6VDC	.6VDC	6.3VAC	0V.	115VDC	130VDC	.6VDC		
V 6	6AG5	0V.	1.3VDC	6.3VAC	0V.	100VDC	135VDC	1.3VDC		
V 7	6AL5	0V.	0V.	6.3VAC	0V.	.9VDC	0V.	-.4VDC		
V 8	6AU6	-.4VDC	0V.	6.3VAC	0V.	125VDC	90VDC	0V.		
V 9	6AR5	2.6VDC	41VDC	0V.	6.3VAC	95VDC	150VDC	95VDC		
V 10	6AU6	#-20VDC	0V.	■6.3VAC	■0V.	#-160VDC	#120VDC	#0V.		
V 11	6AU6	0V.	0V.	0V.	6.3VAC	140VDC	140VDC	1 VDC		
V 12	6AU6	-.1VDC	0V.	0V.	6.3VAC	140VDC	140VDC	.8VDC		
V 13	6AU6	-.6VDC	0V.	0V.	6.3VAC	70VDC	70VDC	0V.		
V 14	6AL5	0V.	-.6VDC	6.3VAC	0V.	0V.	0V.	-.6VDC		
V 15	12AU7	115VDC	2.6VDC	22VDC	■6.3VAC	■6.3VAC	55VDC	.3VDC	5.4VDC	0V.
V 16	12AU7	55VDC	-.6VDC	0V.	0V.	0V.	15VDC	-.6VDC	0V.	6.3VAC
V 17	12AU7	145VDC	0V.	6.5VDC	0V.	0V.	50VDC	-42VDC	0V.	6.3VAC
V 18	6AL5	1 VDC	0V.	6.3VAC	0V.	-.1VDC	0V.	-.1VDC		
V 19	12AU7	1 VDC 5.3VDC	-.1VDC	.3VDC	0V.	0V.	40VDC 120VDC	-4VDC -6.5VDC	0V.	6.3VAC
V 20	6AQ5	0V.	35VDC	6.3VAC	0V.	340VDC	340VDC	0V.		
V 21	6AL5	0V.	-5.3VDC	0V.	6.3VAC	0V.	0V.	-5.3VDC		
V 22	6AH6	0V.	7VDC	0V.	6.3VAC	300VDC	85VDC	.4VDC		
V 23	6AR5	-13VDC	.3VDC	0V.	6.3VAC	240VDC	150VDC	0V.		
V 24	6BG6G	0V.	0V.	.2VDC	0V.	-29VDC	0V.	6.3VAC	300VDC	TOP CAP *
V 25	6W4GT	540VDC	520VDC	540VDC	310VDC	370VDC	370VDC	■6.3VAC	■0V.	
V 26	1B3GT	* DO NOT MEASURE.								
V 27	16AP4	0V.	1.1VDC	PIN 10 320 VDC	PIN 11 80VDC	PIN 12 6.3VAC				

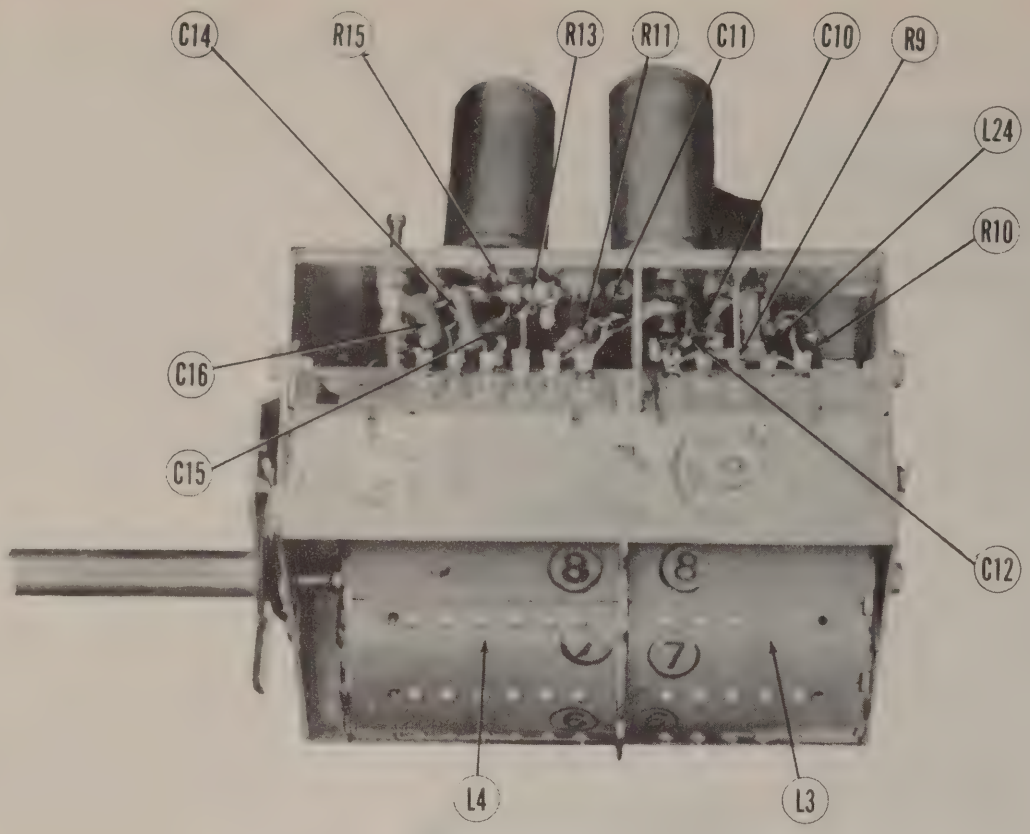
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	130KΩ	0Ω	.1Ω	0Ω	‡2KΩ	‡2KΩ	0Ω		
V 2	6J6	†4.7KΩ	†125Ω	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AG5	100KΩ	68Ω	0Ω	.1Ω	‡1.6KΩ	‡1.6KΩ	68Ω		
V 4	6AG5	100KΩ	68Ω	.1Ω	0Ω	‡1.5KΩ	‡1.5KΩ	68Ω		
V 5	6AG5	92KΩ	60Ω	.1Ω	0Ω	‡4.5KΩ	‡1.3KΩ	60Ω		
V 6	6AG5	.2Ω	100Ω	.1Ω	0Ω	‡6KΩ	‡1.2KΩ	100Ω		
V 7	6AL5	0Ω	0Ω	.1Ω	0Ω	1 Meg.	0Ω	4KΩ		
V 8	6AU6	4KΩ	0Ω	.1Ω	0Ω	‡4KΩ	‡7KΩ	0Ω		
V 9	6AR5	1 Meg.	1000Ω	0Ω	.1Ω	‡3.5KΩ	‡125Ω	12KΩ		
V 10	6AU6	47KΩ	‡125Ω	9KΩ	9KΩ	80KΩ	†15KΩ	‡125Ω		
V 11	6AU6	0Ω	0Ω	0Ω	.1Ω	‡1000Ω	‡1000Ω	68Ω		
V 12	6AU6	100KΩ	0Ω	0Ω	.1Ω	‡1000Ω	‡1000Ω	68Ω		
V 13	6AU6	150KΩ	0Ω	0Ω	.1Ω	‡12KΩ	‡12KΩ	0Ω		
V 14	6AL5	200KΩ	100KΩ	.1Ω	0Ω	0Ω	0Ω	100KΩ		
V 15	12AU7	†10KΩ	500KΩ	4.7KΩ	9KΩ	9KΩ	‡230KΩ	1 Meg.	20KΩ	9KΩ
V 16	12AU7	†10KΩ	1 Meg.	0Ω	0Ω	0Ω	‡38KΩ	10 Meg.	0Ω	.1Ω
V 17	12AU7	‡3.5KΩ	220KΩ	3.3KΩ	0Ω	0Ω	♦500KΩ	220KΩ	0Ω	.1Ω
V 18	6AL5	1.5 Meg.	1 Meg.	.1Ω	0Ω	220KΩ	0Ω	220KΩ		
V 19	12AU7	†3 Meg. ‡2 Meg.	220KΩ	10KΩ	0Ω	0Ω	‡2 Meg. †1 Meg.	4 Meg. 3 Meg.	0Ω	.1Ω
V 20	6AQ5	4.7 Meg.	6.5KΩ 1.5KΩ	.1Ω	0Ω	‡2KΩ	‡2KΩ	4.7 Meg.		
V 21	6AL5	0Ω	400KΩ	0Ω	.1Ω	950KΩ	0Ω	400KΩ		
V 22	6AH6	1.4 Meg.	150Ω	0Ω	.1Ω	‡22KΩ	‡10KΩ	160Ω		
V 23	6AR5	33KΩ	11Ω	0Ω	.1Ω	‡5KΩ	‡125Ω	Inf.		
V 24	6BG6G	1 Meg.	0Ω	0Ω	Inf.	1 Meg.	Inf.	.1Ω	‡10KΩ	TOP CAP ♦70Ω
V 25	6W4GT	Inf.	Inf.	Inf.	Inf.	‡40Ω	‡20Ω	9KΩ	9KΩ	
V 26	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ♦440Ω
V 27	16AP4	0Ω	1 Meg.	PIN 10 ‡200KΩ	PIN 11 225KΩ	PIN 12 .1Ω				

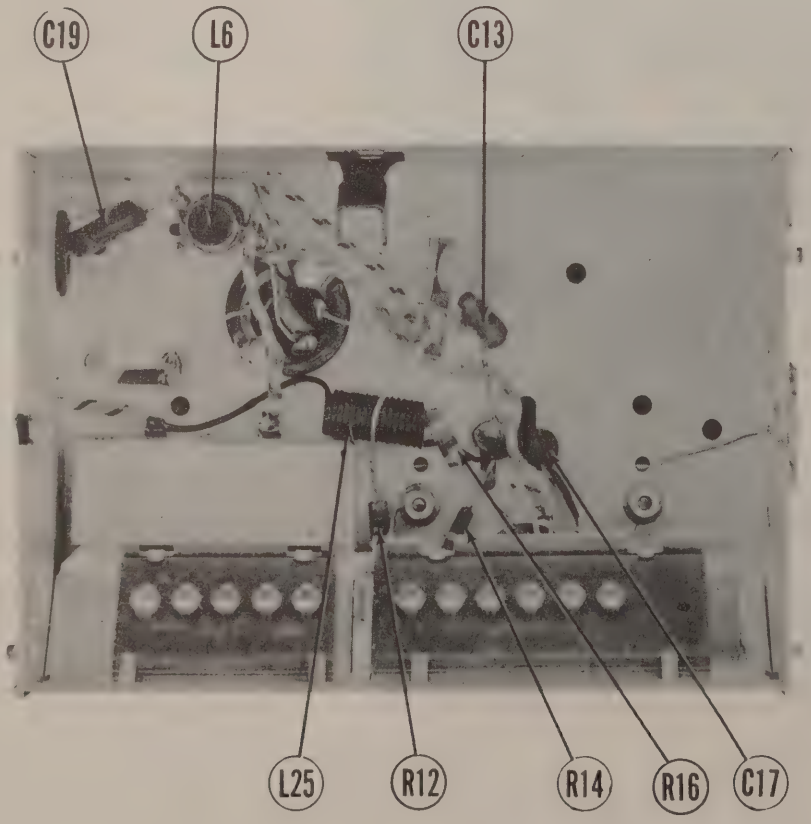
* DO NOT MEASURE.
# MEASURED FROM PIN 7 OF V10.
■ MEASURED FROM PIN 8 OF V25.
§ TAKEN WITH VACUUM TUBE VOLTMETER.

† MEASURED FROM OUTPUT OF M2.
‡ MEASURED FROM JUNCTION OF R138 and M2.
♦ MEASURED FROM PIN 3 OF V25.

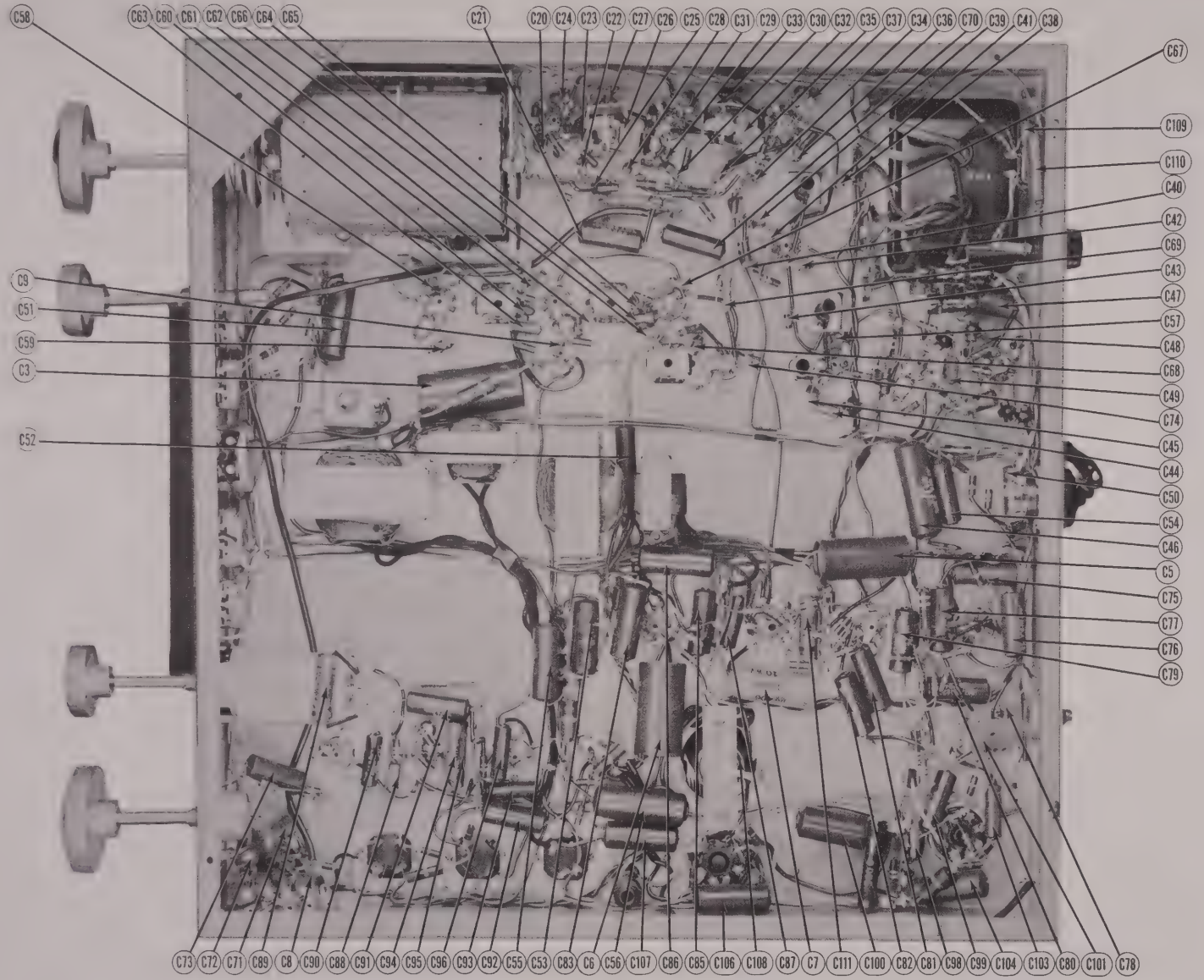
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



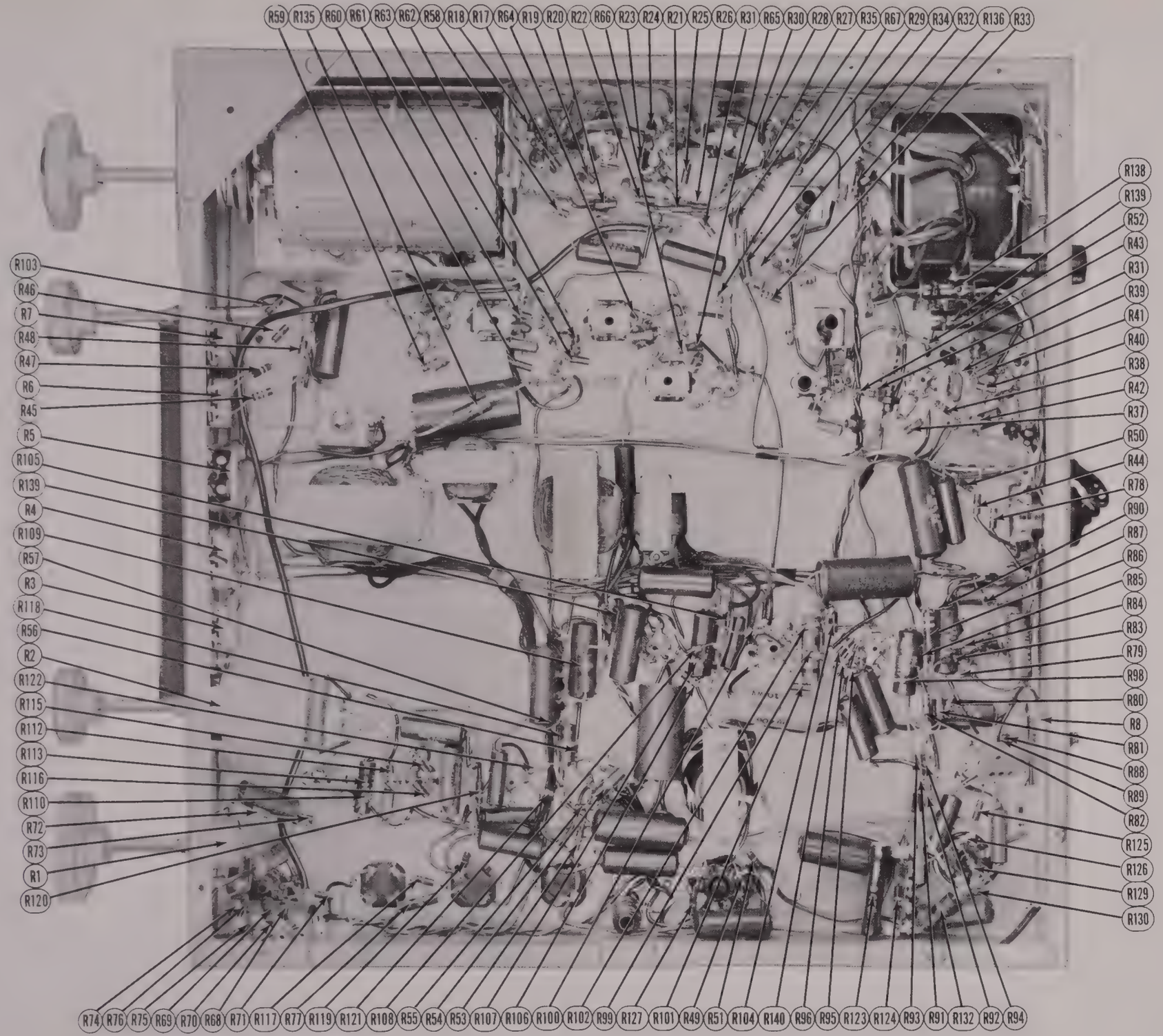
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: RADIO CRAFT PART No	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AG5	6AG5	7BD	
V4	2nd Video IF	6AG5	6AG5	7BD	
V5	3rd Video IF	6AG5	6AG5	7BD	
V6	4th Video IF	6AG5	6AG5	7BD	
V7	Video Det. -DC Restorer	6AL5	6AL5	6BT	
V8	Video Amp.	6AU6	6AU6	7BK	
V9	Video Output	6AR5	6AR5	6CC	
V10	AGC Amp	6AU6	6AU6	7BK	
V11	1st Sound IF	6AU6	6AU6	7BK	
V12	2nd Sound IF	6AU6	6AU6	7BK	
V13	Limiter	6AU6	6AU6	7BK	
V14	Disc.	6AL5	6AL5	6BT	
V15	AF Amp.	12AU7	12AU7	9A	
V16	Sync. Clipper-Sync Sep.	12AU7	12AU7	9A	
V17	Vert. Phase Inv. - Bor Disech	12AU7	12AU7	9A	
V18	Vert. Phase Det	6AL5	6AL5	6BT	
V19	Vert. AFC-Vert. Osc	12AU7	12AU7	9A	
V20	Vert. Output	6AQ5	6AQ5	7BZ	
V21	Hor Sync. Disc.	6AL5	6AL5	6BT	
V22	Hor AFC	6AH6	6AH6	7BK	
V23	Hor Osc.	6AR5	6AR5	6CC	
V24	Hor Output	6BG6G	6BG6G	5BT	
V25	Damper	6W4GT	6W4GT	4CG	
V26	HV Rectifier	1B3GT	1B3GT	3C	
V27A	Picture Tube	16AP4	16AP4	12D	
B	Picture Tube	16GP4	16GP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: RADIO CRAFT. PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	400	18S010	AP88J			TVL-64	▬ Filter
B	40	400						▲ Filter
C2A	100	200	18S011	AP2020E				▬ Filter
B	100	200						▲ Filter
C3A	10	100	18X019	PRS150/20-40			UT 101	Filter-Red
B	40	50					TVA-16	Filter-Green
C4A	10	450	18S012	AP4J33H4A			TVA-36	▬ Decoupling
B	10	200					TVA-5	■ Decoupling
C	10	150						▲ Decoupling
D	25	25						Hor. AFC Cathode Bypass
C5A	1	6	18X014	PRS150/4			TVA-11	Vert. AFC Filter-Green
B	5	6		PRS150/4			TVA-12	Vert. AFC Filter-Red
C6	100	50	18X013	PRS50/100			TVA-17	Vert. Output Cathode Bypass
C7	100	10		PRS25/100			TVA-8	Vert. AFC Cathode Bypass *
C8	50	50	18X016	PRS50/50			TVA-16	Audio Coupling
C9	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	RF Bypass
C10	5			SI5CNPO	D2-4.7	NPOK-5		Fixed Trimmer
C11	120			GP120M	D6-121	GP2K-120		RF Decoupling
C12	1000			GP1000M	D6-102	GP2L-001		RF Filament Bypass
C13	1000			GP1000M	D6-102	GP2L-001		RF Bypass
C14	100			SI100KN750	DN-100	N750L-100		RF Coupling
C15	20			GP20K	D2-20	NPOK-20		Osc. Grid Cap.
C16	10			SI10JN750	DN-10	N750K-10		Fixed Trimmer
C17	1000			GP1000M	D6-102	GP2L-001	29C4	Conv. Filament Bypass
C18	68			CN68JNPO	D2-68	NPOM-68		Fixed Trimmer
C19	120	300		GP120M	D6-121	GP2K-120		IF Coupling
C20	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C21	.047	400	18Z254	P488-047			TM-15	AGC Filter
C22	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C23	1000		18X614	GP1000M	D6-102	GP2L-001	1FM 21	1st V. IF Decoupling
C24	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	1st V. IF Filament Bypass
C25	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	RF Bypass
C26	100	300	18X402	1469-0001	D2-100	NPOM-100	MS-31	Fixed Trimmer
C27	100		18X605	1468-0001	D6-101	GP1K-100	1FM-31	IF Coupling
C28	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C29	1000		18X614	GP1000M	D6-102	GP2L-001	1FM 21	RF Bypass
C30	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	2nd V. IF Decoupling
C31	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	2nd V. IF Fil. Bypass
C32	100	300	18X402	1469-0001	D2-100	NPOM-100	MS-31	Fixed Trimmer
C33	100		18X605	GP100M	D6-101	GP1K-100	1FM-31	IF Coupling
C34	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	AGC Filter
C35	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	RF Bypass
C36	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	3rd V. IF Decoupling
C37	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	3rd V. IF Filament Bypass
C38	100		18X605	GP100M	D6-101	GP1K-100	1FM-31	IF Coupling
C39	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	RF Bypass
C40	1000		18X614	GP1000M	D6-102	GP2L-001	1FM 21	4th V. IF Decoupling
C41	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	4th V. IF Cathode Bypass
C42	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	4th V. IF Fil. Bypass
C43	100		18X605	GP100M	D6-101	GP1K-100	1FM-31	IF Coupling
C44	5		18X615	GP5K	D2-4.7	NPOK-5	MS-55	V. Diode Filter
C45	47	300	18X408	1469-00005	D2-47	NPOM-50	MS-45	Fixed Trimmer
C46	.47	200	18Z282	P288-47			TC-5	1st V. Amp. Screen Bypass
C47	.047	400	18Z254	P488-047			TM-15	Video Coupling
C48	560	500	18X406	1468-0005	D6-561	GP2K-560	1FM-35	2nd V. Amp. Cathode Bypass †
C49	100	300	18X402	1468-0001	D6-101	GP1K-100	1FM-31	2nd V. Amp. Cathode Bypass †
C50	.047	400	18Z254	P488-047			TM-15	Video Coupling
C51	.1	400	18Z264	P488-1			TM-1	Pic. Tube Cathode Dec.
C52	.022	400	18Z244	P488-022			TM-11	Vert. Sweep Coupling
C53	.047	600	18Z256	P688-047			TM-15	Voltage Divider
C54	.01	600	18Z234	P688-01	D6-103	811-01	TM-11	Acc. Anode Decoupling
C55	.1	400	18Z264	P488-1			TM-1	AGC Filter
C56	22	400	18Z274	P488-22			TC-2	AGC Filter
C57	1000		18X614	GP1000M	D6 102	GP2L-001	1FM-21	V. Det.-DC Res. Fil. Bypass
C58	1000		18X614	GP1000M	D6 102	GP2L-001	1FM-21	1st S. IF Fil. Bypass
C59	1000		18X614	GP1000M	D6 102	GP2L-001	1FM-21	1st S. IF Decoupling
C60	47		18X604	GP47M	D6-470	GP1K-47	1FM-45	2nd S. IF Grid Filter
C61	1000		18X614	GP1000M	D6-103	GP2L-001	1FM-21	2nd S. IF Fil. Bypass
C62	1000		18X614	GP1000M	D6-103	GP2L-001	1FM-21	2nd S. IF Decoupling

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: RADIO CRAFT. PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C63	8		18X616	C18DN080		N080K-8		Fixed Trimmer
C64	8		18X616	C18DN080		N080K 8		Fixed Trimmer
C65	22		18X603	GP22M	D6-220	GP1K 22	MS-425	Limiter Grid Filter
C66	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	Limiter Decoupling *
C67	1000		18X614	GP1000M	D6-102	GP2L 001	1FM-21	Limiter Fil. Bypass
C68	100		18X605	GP100M	D6-101	GP1K 100	1FM-31	RF Bypass
C69	1500		18X607	GP1500M	D6-152	GP2L-0015	1FM-215	De-emphasis
C70	.022	400	18Z244	P488-022			TM-12	Audio Coupling
C71	.047	400	18Z254	P488-047			TM-15	Audio Coupling
C72	.022	400	18Z244	P488-022			TM-12	Audio Coupling
C73	.047	400	18Z254	P488-047			TM-15	Tone Compensation
C74	1000		18X614	GP1000M	D6-102	GP2L-001	1FM-21	Discr. Filament Bypass
C75	.047	400	18Z254	P488-047			TM-15	Sync. Coupling
C76	.047	400	18Z254	P488-047			TM-15	Sync. Coupling
C77	.047	400	18Z254	P488-047			TM-15	Vert. Sync. Coupling
C78	1500		18X607	GP1500M	D6-152	GP2L-0015	1FM-215	Vert. Phase Inv. Grid Bypass
C79	.047	400	18Z254	P488-047			TM-15	Vert. Sync. Coupling
C80	.047	400	18Z254	P488-047			TM-15	Vert. Sync. Coupling
C81	.047	400	18Z254	P488-047			TM-15	Vert. Sync. Coupling
C82	.047	400	18Z254	P488-047			TM-15	Vert. Sync. Coupling
C83	.1	400	18Z264	P488-1			TM-1	Vert. Sweep Coupling
C84	.0022	400	18Z214	P688-0022	D6-222	GP2M-0022	TM-22	Voltage Divider *
C85	.047	400	18Z254	P488-047			TM-15	Vert. Discharge
C86	.1	400	18Z264	P488-1			TM-1	Vert. Sweep Coupling
C87	.001	600	18Z208	P688-001	D6-102	GP2L-001	TM-21	Vert. Osc. Grid Cap.
C88	100	300	18X402	1468-0001	D6-101	GP1K-100	1FM-31	Hor. Sync. Coupling
C89	.015	400	18X301	P488-015			MB-115	Fixed Trimmer
C90	.0047	400	18X224	P688-0047	D6-472	GP2M-0047	TM-25	AFC Filter
C91	.0047	400	18Z224	P688-0047	D6-472	GP2M-0047	TM-25	AFC Filter
C92	.047	400	18Z254	P488-047			TM-15	Hor. AFC Screen Bypass
C93	.0047	400	18Z224	P688-0047	D6-472	GP2M-0047	TM-25	Hor. AFC Coupling
C94	1200		18X614					Phase Shifter
C95	.015	400	18X301	P488-015			MB-115	Phase Shifter
C96	.0047	400	18Z224	P688-0047	D6-472	GP2M-0047	TM-25	Hor. Osc. Grid Cap.
C97	.1	400	18Z264	P488-1			TM-1	Voltage Divider *
C98	470	500	18X403	1468-0005	D6-471	GP2K-470	1FM-35	Differentiator Net.
C99	.01	600	18Z234	P688-01	D6-103	811-01	TM-11	Hor. Sweep Coupling
C100	.1	600	18Z266	P668-1			TM-1	Hor. Discharge Plate Dec.
C101	680	500	18X406		D6-681	GP2K-680	1FM-37	Hor. Discharge
C102	.1	400	18Z264	P488-1			TM-1	Hor. Discharge *
C103	.001	600	18Z206	P688-001	D6-102	GP2L-001	TM-21	Hor. Sweep Coupling
C104	.1	400	18Z264	P488-1			TM-1	Hor. Output Screen Bypass
C105	.47	200	18Z282	P288-47			TC-5	Hor. Sweep Coupling
C106	.047	600	18Z256	P688-047			TM-15	Damper Filter
C107	.047	600	18Z256	P688-047			TM-15	Damper Filter
C108	500	20000	18X613					HV Filter
C109	.01	600	18Z236	P688-01	D6-103	811-01	TM-11	Line Filter
C110	.01	600	18Z236	P688-01	D6-103	811-01	TM-11	Line Filter
C111	.01	400	18Z234	P488-01	D6-103	811-01	TM-11	Integrator Net.

* Not used in all models.
† Some models use 25MFD, 25 Volts in this application. MFGR'S Part No. 18X008.
‡ Some models use 220MMF in this application. MFGR'S Part No. 18X401.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Radio Craft. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	23S706	Q13-133X	T-78	BT-67-S	Volume control tapped @ 150KΩ
B	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R1A per instructions
R2	1500Ω	2	23S714				Contrast control-Wire Wound
R3A	1 Meg.	½	23S711	Q11-137	AM-61-S	AN-69	Vert. hold control
. B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R3A per instructions
R4A	5000Ω	½	23S712	Q11-114	AM-19-S	AN-10	Vert. linearity control
. B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R4A per instructions
R5	5000Ω	2	23S713	W-5000 *	43-5000*	V-135 *	Focus control-Wire Wound
R6A	100KΩ	½	23S707	Q11-128	AM-49-S	AN-40	Brightness control
B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R6A per instructions
R7A	2 Meg.	½	23S709	Q11-139	AM-83-S	AN-75	Vert. size control
. B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R7A per instructions
R8A	50KΩ	½	23S708	Q11-123	AM-44-S	AN-31	Horiz. drive control
B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R8A per instructions

* File slot in shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: RADIO CRAFT. PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 20% UNLESS OTHERWISE STATED
R9	3900Ω 10%	½	23X071	BTS-3900	RF Grid
R10	47KΩ		23Z044		AGC Network
R11	10KΩ 10%		23Z004		RF Plate Coil Shunt
R12	2200Ω		23Z033	BTS-2200	RF Decoupling
R13	4700Ω		23Z043		Conv. Grid
R14	220KΩ		23Z025		Conv. Grid
R15	10KΩ 10%		23Z004		Osc. Grid
R16	4700Ω		23Z043		Osc. Plate
R17	10KΩ		23Z004		1st Video IF Grid
R18	68Ω		23Z061		1st Video IF Cathode
R19	1000Ω		23Z003	BTS-1000	1st Video IF Decoupling
R20	1000Ω		23Z003	BTS-1000	AGC Network
R21	1000Ω		23Z003	BTS-1000	AGC Network
R22	1500		23Z012		Decoupling
R23	10KΩ		23Z004		2nd Video IF Grid
R24	68Ω		23Z061		2nd Video IF Cathode
R25	1000Ω		23Z003	BTS-1000	2nd Video IF Decoupling
R26	150Ω		23Z012		Decoupling Network
R27	4700Ω		23Z043		3rd Video IF Grid
R28	68Ω		23Z061		3rd Video IF Cathode
R29	3300Ω		23Z033	BTS-3300	3rd Video IF Plate
R30	1000Ω		23Z003	BTS-1000	3rd Video IF Decoupling
R31	150Ω		23Z012		Decoupling Network
R32	100Ω		23Z002		4th Video IF Cathode
R33	4700Ω		23Z043		4th Video IF Plate
R34	1000Ω		23Z003	BTS-1000	4th Video IF Decoupling
R35	150Ω		23Z012		Decoupling Network
R36	3900Ω		23X071	BTS-3900	Video Det. Diode Load-See Note 1
R37	15KΩ		23Z014	BTS-15K	Voltage Divider
R38	6800Ω		23Z063	BTS-6800	Video Amp. Screen

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: RADIO CRAFT. PART No.	IRC PART No.	IDENTIFICATION CODES
R39	3900Ω 10%	½	23X071	BTS-3900	Video Amp. Plate
R40	1 Meg.	½	23Z006	BTS-1 Meg.	Video Output Grid
R41	220Ω	½	23Z022	BW-½-220	Video Output Cathode
R42	3300Ω	2	23Z233	BT-2-3300	Video Output Plate
R43	1 Meg.	½	23Z006	BTS-1 Meg.	DC Rest. Load
R44	100KΩ	½	23Z005	BTS-100K	Picture Tube Grid
R45	330KΩ	½	23Z035	BTS-330K	Voltage Divider
R46	10KΩ	½	23Z004	BTS-10K	Voltage Divider
R47	150KΩ	½	23Z015	BTS-150K	Voltage Divider
R48	22KΩ	½	23Z024	BTS-22K	Voltage Divider
R49	220KΩ	½	23Z025	BTS-220K	Acc. Anode Load
R50	1000Ω	½	23Z003	BTS-1000	Acc. Anode Decoupling
R51	1.5 Meg.	½	23Z016	BTS-1.5 Meg.	Voltage Divider
R52	33KΩ	½	23Z034	BTS-33K	AGC Amp. Grid
R53	15KΩ	½	23Z014	BTS-15K	AGC Amp. Screen
R54	22KΩ	½	23Z124	BTA-22K	Voltage Divider
R55	22KΩ	½	23Z024	BTS-22K	Horiz. Size Control Shunt
R56	68KΩ	½	23Z064	BTS-68K	AGC Network
R57	10KΩ	½	23Z004	BTS-10K	AGC Network
R58	4700Ω	½	23Z043	BTS-4700	AGC Network
R59	68Ω		23Z061		1st Sound IF Cathode
R60	1000Ω		23Z003	BTS-1000	1st Sound IF Decoupling
R61	100KΩ		23Z005		2nd Sound IF Grid
R62	68Ω		23Z061		2nd Sound IF Cathode
R63	1000Ω		23Z003	BTS-1000	2nd Sound IF Decoupling
R64	150KΩ		23Z015		Limiter Grid
R65	100KΩ		23Z005	BTS-100K	Disc. Diode Load
R66	100KΩ		23Z005	BTS-100K	Disc. Diode Load
R67	47KΩ		23Z044	BTS-47K	De-emphasis
R68	1 Meg.		23Z006	BTS-1 Meg.	AF Amp. Grid
R69	10KΩ		23Z004	BTS-10K	AF Amp. Grid
R70	10KΩ		23Z004	BTS-10K	AF Amp. Cathode
R71	220KΩ		23Z025	BTS-220K	AF Amp. Plate
R72	47KΩ		23Z044	BTS-47K	Tone Compensation
R73	15KΩ		23Z014	BTS-15K	Tone Compensation
R74	470KΩ		23Z045	BTS-470K	AF Amp. Grid
R75	4700Ω		23Z043	BTS-4700	AF Amp. Grid
R76	470Ω		23Z042	BTS-470	AF Amp. Cathode
R77	10KΩ		23Z104	BTA-10K	AF Amp. Decoupling
R78	15KΩ		23Z014	BTS-15K	Isolation
R79	10 Meg.		23Z007	BTS-10 Meg.	Sync. Clipper Grid
R80	33KΩ		23Z034	BTS-33K	Sync. Clipper Plate
R81	15KΩ		23Z014	BTS-15K	Sync. Clipper Plate
R82	3300Ω		23Z033	BTS-3300	Voltage Divider
R83	1 Meg.		23Z006	BTS-1 Meg.	Sync. Sep. Grid
R84	6800Ω		23Z063	BTS-6800	Sync. Sep. Plate
R85	2200Ω		23Z023	BTS-2200	Decoupling
R86	4700Ω		23Z143	BTA-4700	Voltage Divider
R87	100KΩ		23Z005	BTS-100K	Integrator
R88	220KΩ		23Z025	BTS-220K	Vert. Phase Inv. Grid
R89	3300Ω		23Z033	BTS-3300	Vert. Phase Inv. Cathode
R90	3300Ω		23Z033	BTS-3300	Vert. Phase Inv. Plate
R91	470KΩ		23Z045	BTS-470K	Integrator Network
R92	470KΩ		23Z045	BTS-470K	Integrator Network
R93	22KΩ		23Z024	BTS-22K	Differentiator Network
R94	22KΩ		23Z024	BTS-22K	Differentiator Network
R95	1.5 Meg.		23Z016	BTS-1.5 Meg.	Differentiator Network
R96	1.5 Meg.		23Z016	BTS-1.5 Meg.	Differentiator Network
R97	1 Meg.		23Z006	BTS-1 Meg.	Feedback Network-See Note 2
R98	220KΩ		23Z025	BTS-220K	Vert. Phase Det. Load
R99	33KΩ		23Z034	BTS-33K	Vert. Phase Det. Load
R100	3.3 Meg.			BTS-3.3 Meg.	Vert. AFC Plate
R101	10KΩ		23Z004	BTS-10K	Vert. AFC Cathode- See Note 2
R102	1.5 Meg.		23Z016	BTS-1.5 Meg.	Voltage Divider
R103	1.5 Meg.		23Z016	BTS-1.5 Meg.	Voltage Divider
R104	10 Meg.		23Z007	BTS-10 Meg.	Vert. Osc. Grid
R105	1 Meg.		23Z006	BTS-1 Meg.	Vert. Osc. Plate
R106	4700Ω		23Z043	BTS-4700	Vert. Peaking
R107	4.7 Meg.		23Z046	BTS-4.7 Meg.	Vert. Output Grid
R108	1500Ω		23Z013	BTS-1500	Vert. Output Cathode
R109	1500Ω	2	23Z213	BT-2-1500	Vert. Output Decoupling
R110	470KΩ	½	23Z045	BTS-470K	Horiz. Sync. Disc. Load
R111	1 Meg.	½	23Z006	BTS-1 Meg.	Horiz. Sync. Disc. Load-See Note 3
R112	470KΩ	½	23Z045	BTS-470K	Horiz. Sync. Disc. Load
R113	470KΩ	½	23Z045	BTS-470K	Horiz. AFC Filter Network
R114	100KΩ	½	23Z005	BTS-100K	Feedback-See Note 3
R115	470Ω		23Z042	BTS-470	Horiz. AFC Grid
R116	10Ω		23Z001		Horiz. AFC Cathode
R117	150Ω	½	23Z012		Horiz. AFC Cathode-See Note 4
R118	22KΩ	2	23Z224	BT-2-22K	Horiz. AFC Plate
R119	15KΩ	½	23Z014	BTS-15K	Horiz. AFC Screen-See Note 5
R120	27KΩ		23Z072	BTS-27K	Voltage Divider
R121	4.7 Meg.		23Z046	BTS-4.7 Meg.	Voltage Divider-See Note 6
R122	33KΩ		23Z034	BTS-33K	Horiz. Osc. Grid
R123	5000Ω	10	23X608	AB-5000	Horiz. Osc. Plate-Wire Wound
R124	6800Ω		23Z063	BTS-6800	Differentiator
R125	220KΩ		23Z025	BTS-220K	Horiz. Discharge Grid
R126	470KΩ		23Z045	BTS-470K	Horiz. Discharge Plate
R127	10KΩ		23Z004	BTS-10K	Filter
R128	15KΩ		23Z014	BTS-15K	Horiz. Peaking-See Note 2
R129	330Ω		23Z032		Parasitic Supp.
R130	1 Meg.		23Z006	BTS-1 Meg.	Horiz. Output Grid
R131	47KΩ		23Z044	BTS-47K	Feedback-See Note 3
R132	10KΩ		23Z204	BT-2-10K	Horiz. Output Screen
R133	1500Ω		23Z013	BTS-1500	Horiz. Centering Network
R134	470KΩ		23Z045		HV Filter
R135	1500Ω	2	23Z213	BT-2-1500	Focus Coil Shunt
R136	33Ω	½	23Z031		Surge Limiter
R137	25Ω	5	23Z421		Surge Limiter-Wire Wound
R138	25Ω	5	23Z421		Surge Limiter-Wire Wound
R139	3300Ω		23Z033	BTS-3300	Vert. Sweep Network
R140	10 Meg.		23Z007	BTS-10 Meg.	Integrator Network

Note 1. Chassis made before serial No. 100145 use 6800Ω resistor in this application.
Note 2. Not used in all models.
Note 3. Not used in chassis made after serial No. 100145.
Note 4. Used in chassis made after serial No. 100145 only.
Note 5. Chassis made before serial No. 100145 use 6800Ω resistor in this application.
Note 6. Chassis made before serial No. 100145 use 1 Meg. resistor in this application.

PHOTOFACT* Folder

STARRETT MODEL
JOHN HANCOCK

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

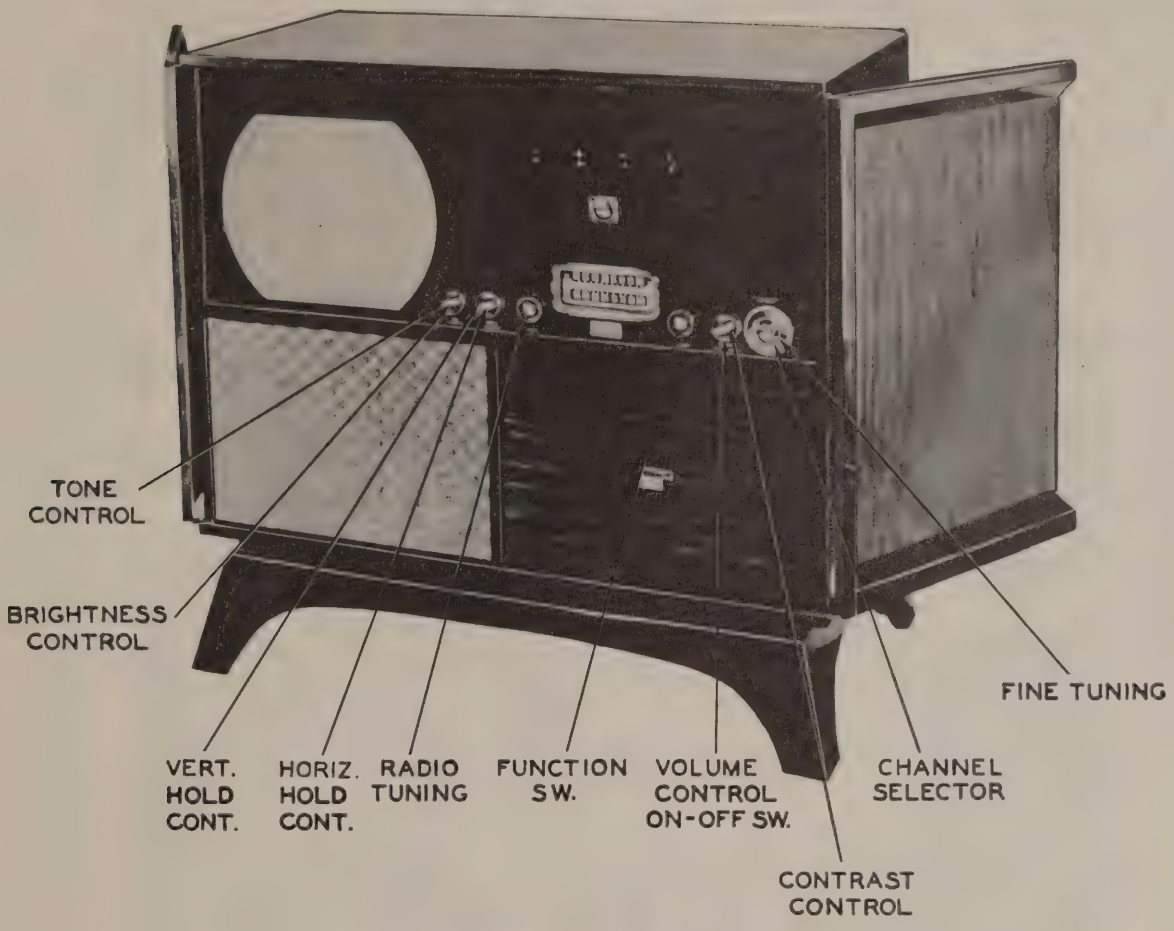
STARRETT MODEL
JOHN HANCOCK

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

Date 5/50 Set No. 96—Folder No. 10

STARRETT MODEL JOHN HANCOCK



STARRETT MODEL JOHN HANCOCK

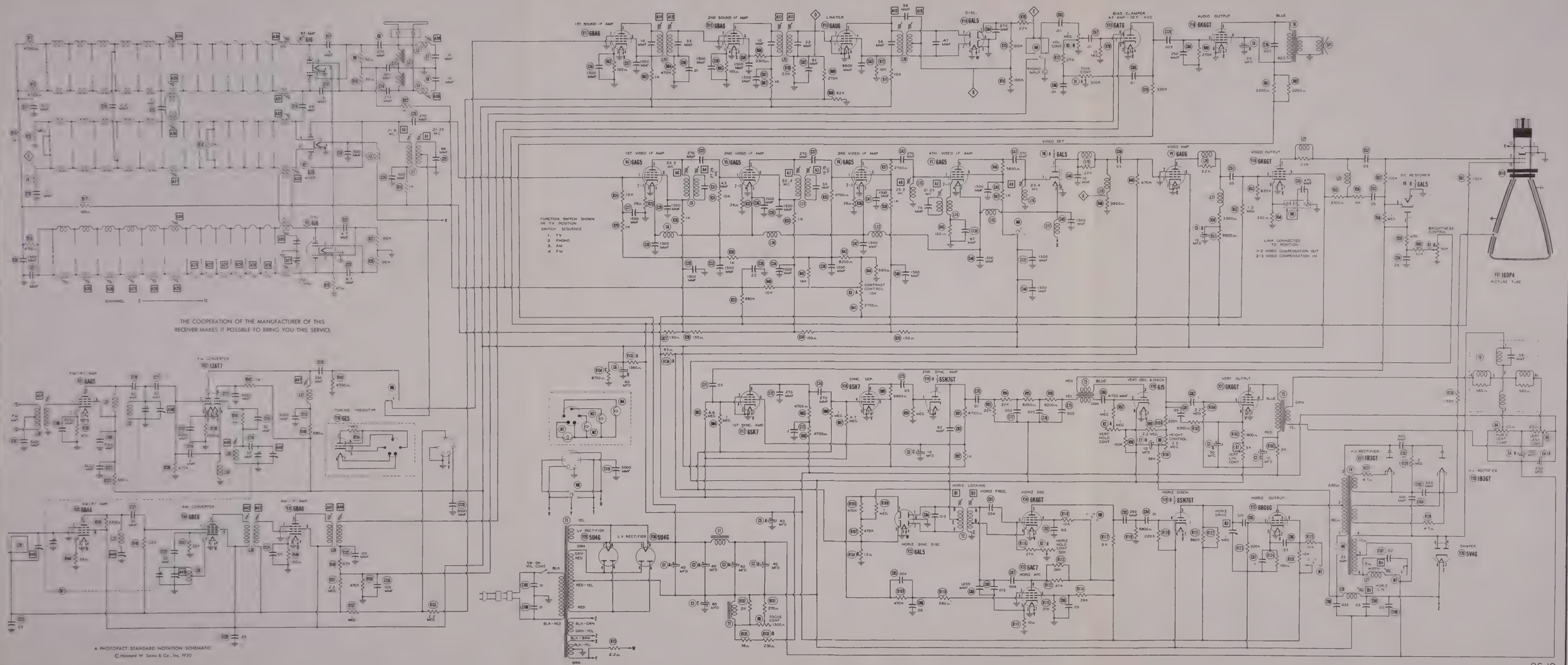
TRADE NAME	Starrett Model "John Hancock"
SUPPLIER	Starrett Televison Corp., 601 W. 25th St., New York, New York
TYPE SET	TV-Phono-AM-FM Combination Receiver
TUBES	Thirty-Seven
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	2.45 Amp. at 117 Volts AC (TV), 1.7 Amp. at 117 Volts AC (Radio)
TUNING RANGE	AM 535-1650KC, FM 88-108MC, TV Channels 2 thru 13

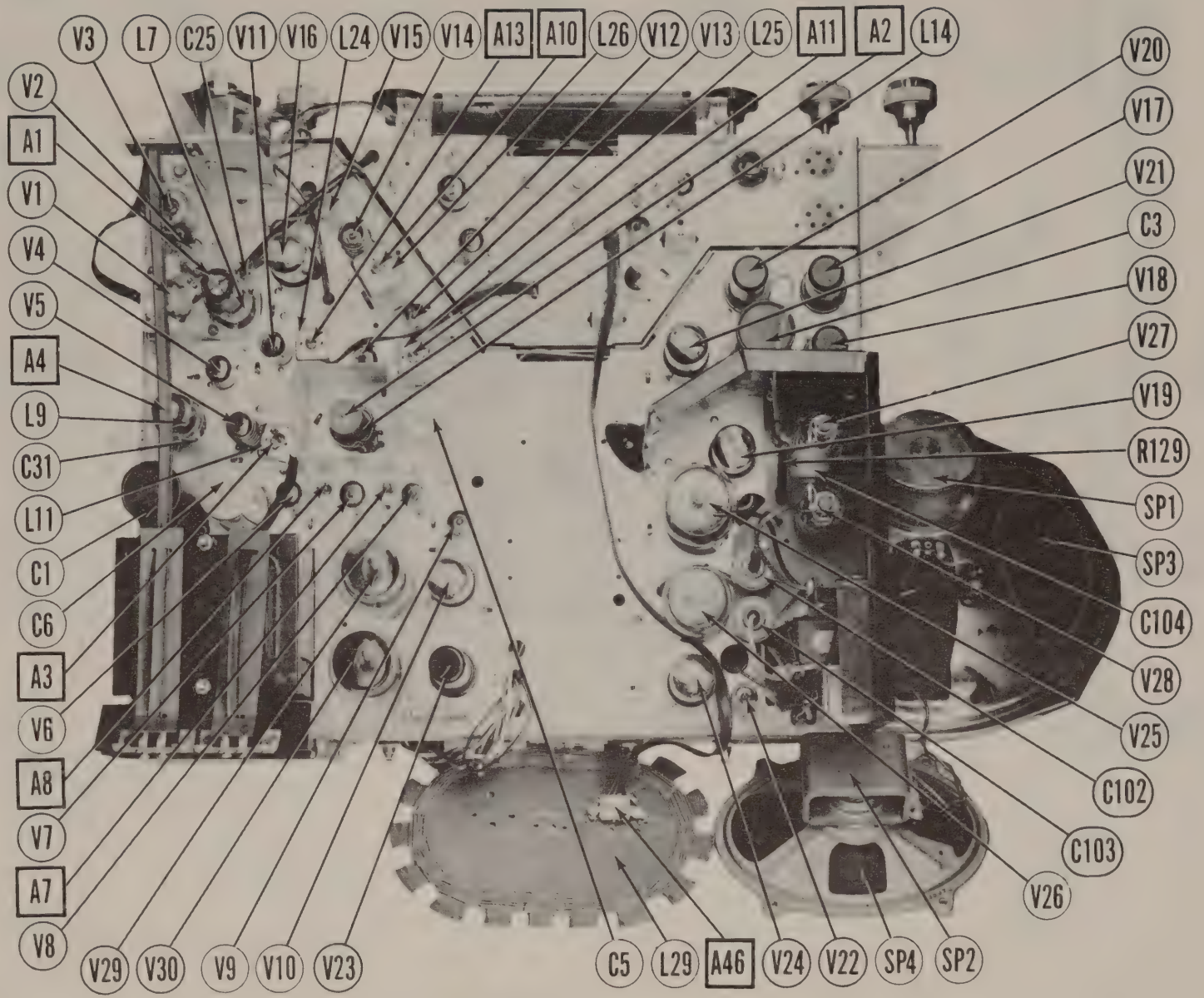
INDEX

Alignment Instructions 6, 7
Block Diagram 20
Drive Cord Stringing 20
Horiz. Sweep Circuit Adjustment 19
Parts List and Description ..... 15 thru 18
Photographs
Capacitor Identification 11, 22
Chassis-Top View 3, 13
Photographs (continued)
RF Tuner (TV) 10
Radio Tuner (FM-AM) 13, 14
Resistor Identification 12, 21
Trans., Inductor and Alignment Identification 4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

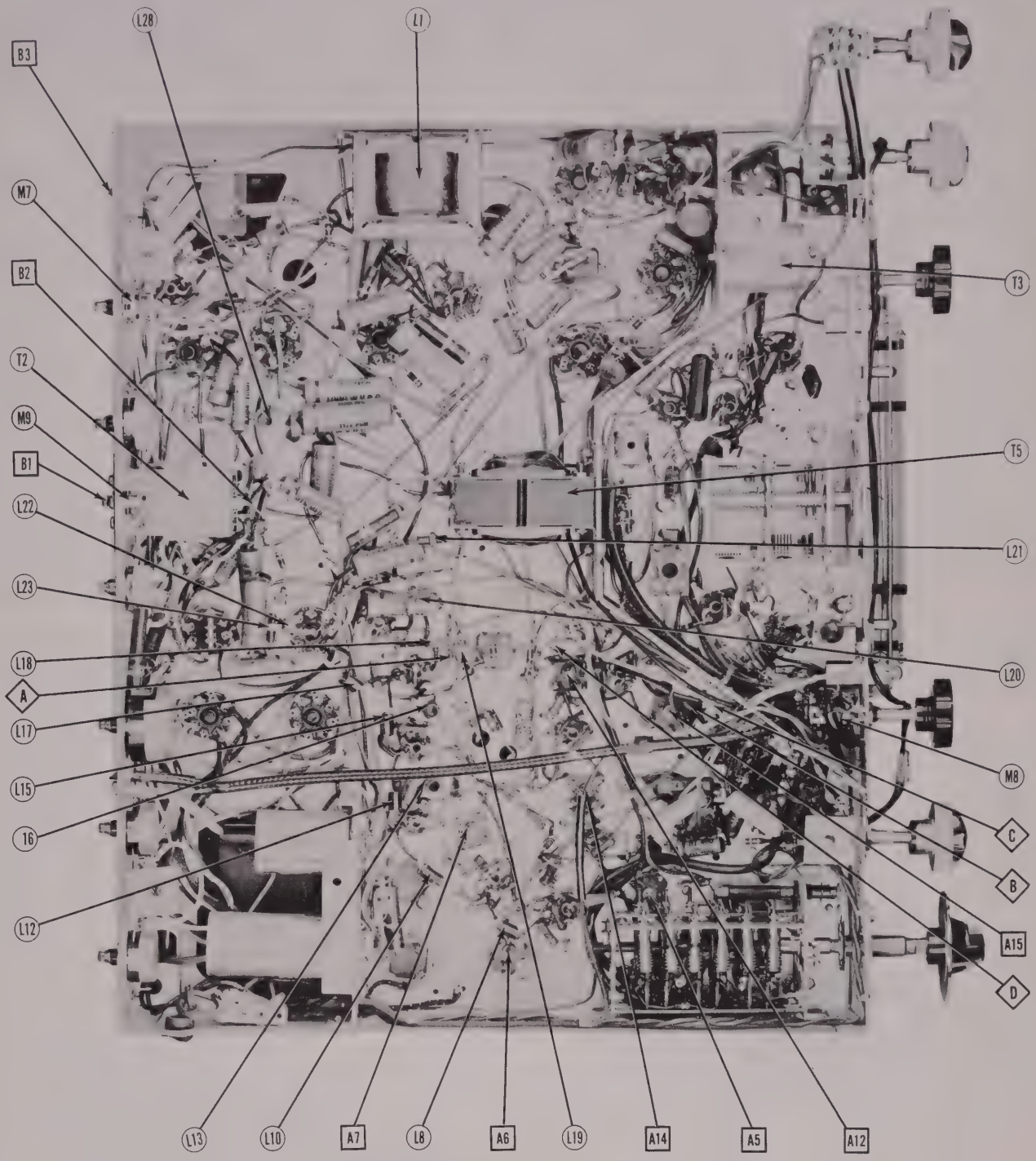
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


STARRETT MODEL
JOHN HANCOCK
THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1950
96-10

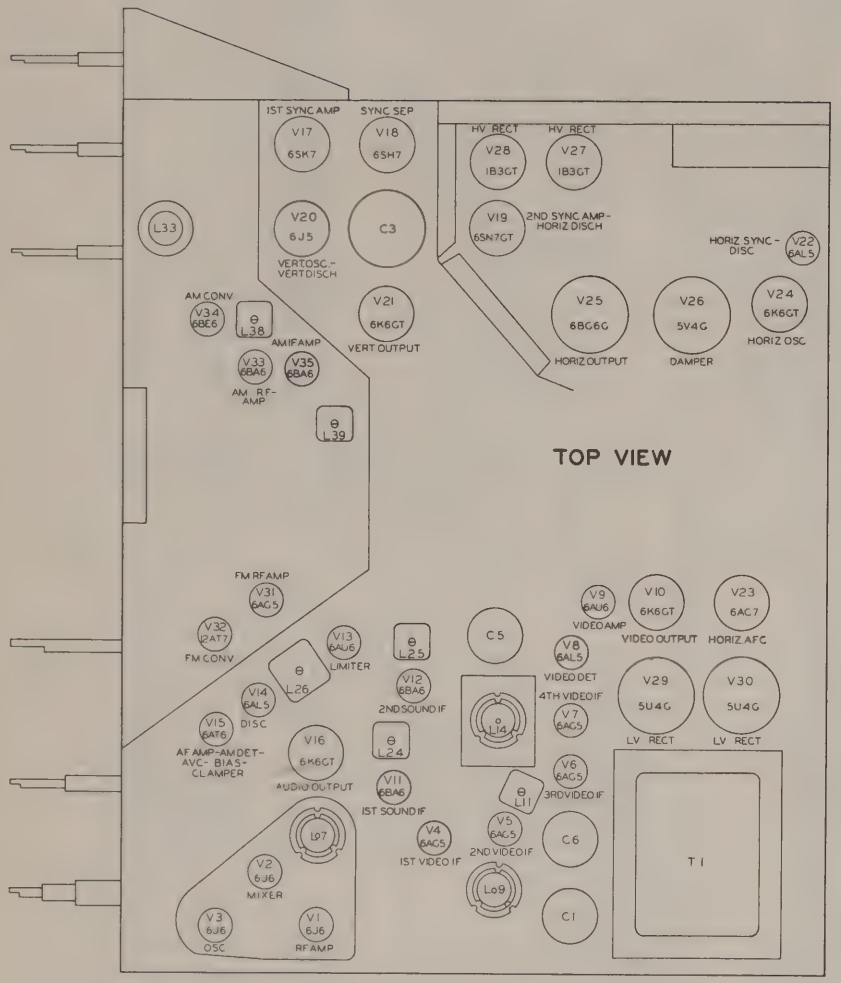


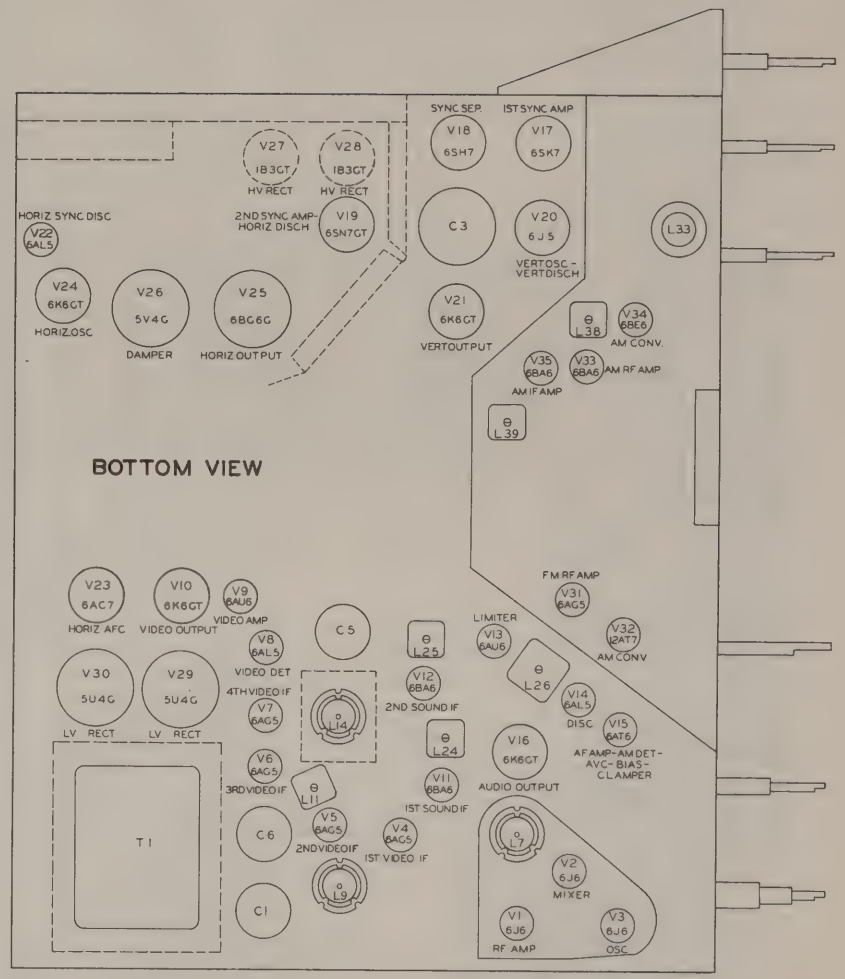
CHASSIS TOP VIEW

STARRETT MODEL
JOHN HANCOCK



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the function selector switch to "TV".
To eliminate the high voltage shock hazard, remove the horizontal discharge tube V19 from its socket.

VIDEO IF ALIGNMENT

Connect a VTVM between the junction of R27 and R28 and chassis. Turn the contrast control to obtain -3 volt reading on the VTVM.
Remove the local oscillator tube (V3) to prevent erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	21.25MC (Unmod.)	Any	DC Probe to Point A Common to chassis.	A1, A2	Adjust for MINIMUM deflection.
2.	Direct	"	19.75MC	"	"	A3	"
3.	Direct	"	27.25MC	"	"	A4	"
4.	Direct	"	21.8MC	"	"	A5	Adjust for maximum deflection.
5.	Direct	"	25.3MC	"	"	A6	"
6.	Direct	"	22.3MC	"	"	A7	"
7.	Direct	"	25.2MC	"	"	A8	"
8.	Direct	"	23.4MC	"	"	A9	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	24MC (10MC SWP)	21.25MC 25.75MC 27.25MC	Any	Vert. Amp. to point A Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A9 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10	.01MFD	High side to pin 1 (Grid) of 6BA6 (V11). Low side to chassis.	21.25MC (Unmod.)	Any	DC Probe thru 1 Meg. to point D. Common to chassis.	A10, A11, A12, A13, A14	Adjust for maximum deflection.
11.	.01MFD	"	"	"	DC Probe to point D. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V11). Low side to chassis.	21.25MC (450KC SWP)	21.25MC	Any	Vert. Amp. to point D. Low side to chassis.	A11, A12, A13, A14	Shunt R70 with 5600Ω. Adjust for maximum amplitude and symmetry as per figure 2. Remove 5600Ω shunt.
11.	.01MFD	"	"	"	"	Vert. Amp. to point D. Low side to chassis.	A15, A10	Adjust A15 so 21.25MC occurs at center of crossover lines as per figure 3. Adjust A10 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Replace the local oscillator tube (V3).
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12	Two 150Ω carbon res.	Across antenna terminals with 150Ω in each lead	215.75MC (Unmod.)	13	DC Probe to Point D Common to chassis.	A16, A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Keep slug pairs at approximately the same relative position.
13.	"	"	209.75MC	12	"	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			203.75MC	11		A19	
			197.75MC	10		A20	
			191.75MC	9		A21	
			185.75MC	8		A22	
			179.75MC	7		A23	
14.	"	"	87.75MC	6	"	A24, A25	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Keep slug pairs at approximately the same relative position.
15.	"	"	81.75MC	5	"	A26	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			71.75MC	4		A27	
			65.75MC	3		A28	
			59.75MC	2		A29	

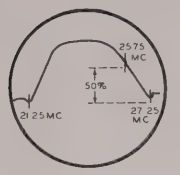


FIG. 1

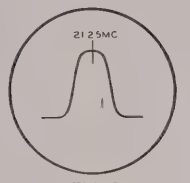


FIG. 2

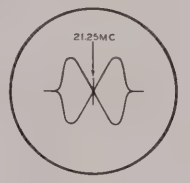


FIG. 3

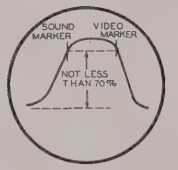
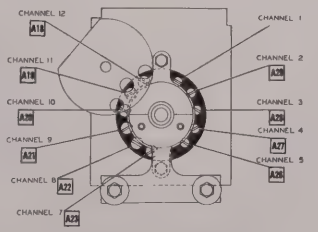


FIG. 4



RF OSCILLATOR ALIGNMENT POINTS

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

The RF and mixer lines of this receiver are pre-set at the factory and are normally very stable. Alignment of this portion of the receiver should not be attempted unless they are definitely known to be out of alignment.
Connect a 1000MMF capacitor from pin 1 (Grid) of the first video IF amplifier (V4) to chassis, using the shortest possible leads.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 150Ω carbon res.	Across antenna terminals with 150Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point B. Low side to chassis.	A30, A31, A32, A33	Adjust for response curve similar to figure 4 with markers above 70%. Keep slug pairs at approximately the same relative position.
17.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all high band channels for response similar to figure 4. If markers are below 70% on any channel, make slight adjustment of A30, A31, A32 and A33 with channel selector set for that channel. Recheck all high band channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
18.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A34, A35, A36, A37	Adjust for response curve similar to figure 4 with markers above 70%.
19.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check all low band channels for response similar to figure 4. If markers are below 70% on any channel, make slight adjustment of A34, A35, A36 and A37 with channel selector set for that channel. Recheck all low band channels to see that they have not been seriously effected.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

WAVE TRAP ADJUSTMENT

Wave traps A38 and A39 are used for specific types of interference and their alignment will depend upon the type encountered. With the receiver tuned to the channel having the interference set fine tuning control until interference is at maximum. Adjust A38 and A39 for minimum interference in the picture and sound, keeping the cores at approximately the same relative position. Turn one core 1/2 turn, adjust the other for minimum interference.

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning gang fully open and set the pointer to the last calibration mark on the left hand end of the dial scale.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
20	.01MFD	High side to pin 7 (Grid) of 6BE6 (V34). Low side to chassis.	465KC (400 ∿ Mod.)	AM (second position counter-clock-wise)	Tuning gang fully open	Across voice coil	A40, A41, A42, A43	Adjust for maximum output.
21	.01MFD	High side to pin 1 (Grid) of 6BA6 (V33). Low side to chassis.	"	"	"	"	A44	Adjust for MINIMUM output.
22		Loop	1600KC	"	1600KC	"	A45	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
23		Loop	1400KC	"	1400KC	"	A46	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT

The FM IF portion of this receiver is common with the sound IF portion of the TV receiver. It is suggested that the sound IF alignment not be attempted unless the video IF portion is aligned first. See instructions under TV alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
24	.01MFD	High side to pin 2 (Grid) of 12AT7 (V32). Low side to chassis.	21.25MC (Unmod.)	FM (max. clock-wise.)	Tuning gang fully closed	DC Probe to Point D. Common to chassis.	A51	Adjust for maximum deflection.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
25	Two 150Ω carbon res.	Across "FM" antenna terminals with 150Ω in each lead.	108MC	FM (max. clock-wise.)	108MC	DC Probe to point D. Common to chassis.	A47	Adjust for maximum deflection.
26	"	"	88MC	"	88MC	"	A48	Adjust for maximum deflection. Repeat steps 25 and 26 until no further improvement can be made.
27	"	"	100MC	"	100MC	"	A49, A50	Adjust for maximum deflection.

STARRETT MODEL
JOHN HANCOCK

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	55VDC	55VDC	6.3VAC	0V.	-.1VDC	-.1VDC	0V.		
V 2	6J6	107VDC	107VDC	6.3VAC	0V.	-1.7VDC	-1.7VDC	0V.		
V 3	6J6	70VDC	70VDC	6.3VAC	0V.	§-1.4VDC	§-1.3VDC	.4VDC		
V 4	6AG5	-.7VDC	.3VDC	0V.	6.3VAC	85VDC	85VDC	.3VDC		
V 5	6AG5	-.6VDC	.4VDC	6.3VAC	0V.	87VDC	87VDC	.4VDC		
V 6	6AG5	-.7VDC	.3VDC	6.3VAC	0V.	87VDC	87VDC	.3VDC		
V 7	6AG5	0V.	2VDC	6.3VAC	0V.	65VDC	95VDC	2VDC		
V 8	6AL5	0V.	▲0V.	6.3VAC	0V.	▲.6VDC	0V.	-3.8VDC		
V 9	6AU6	-1.3VDC	0V.	0V.	6.3VAC	235VDC	105VDC	0V.		
V 10	6K6GT	0V.	0V.	85VDC	105VDC	-2VDC	0V.	6.3VAC	2.2VDC	
V 11	6BA6	0V.	0V.	0V.	6.3VAC	93VDC	93VDC	1.2VDC		
V 12	6BA6	0V.	0V.	6.3VAC	0V.	95VDC	90VDC	1.2VDC		
V 13	6AU6	-.3VDC	0V.	0V.	6.3VAC	42VDC	38VDC	0V.		
V 14	6AL5	-.1VDC	-.6VDC	5.4VAC	0V.	0V.	0V.	0V.		
V 15	6AT6	-.5VDC	0V.	0V.	6.3VAC	.2VDC	-.5VDC	77VDC		
V 16	6K6GT	0V.	6.3VAC	235VDC	245VDC	-15VDC	0V.	0V.	0V.	
V 17	6SK7	0V.	0V.	0V.	-.9VDC	0V.	95VDC	6.3VAC	195VDC	
V 18	6SH7	0V.	0V.	0V.	-1VDC	0V.	105VDC	6.3VAC	100VDC	
V 19	6SN7GT	-.4VDC	65VDC	0V.	▲-35VDC	▲46VDC	▲0V.	6.3VAC	0V.	
V 20	6J5	0V.	0V.	▲115VDC ▲385VDC	▲0V.	▲-17VDC	▲-2.3VDC ▲0V.	6.3VAC	▲0V. ▲32VDC	
V 21	6K6GT	0V.	6.3VAC	▲335VDC	▲335VDC	▲0V.	▲32VDC	0V.	▲44VDC	
V 22	6AL5	-.7VDC	-3.1VDC	0V.	5.4VAC	-2.2VDC	0V.	-5.2VDC		
V 23	6AC7	0V.	0V.	0V.	-.6VDC	.1VDC	90VDC	6.3VAC	220VDC	
V 24	6K6GT	0V.	0V.	155VDC	200VDC	-26VDC	380VDC	6.3VAC	.2VDC	
V 25	6BG6G	0V.	6.3VAC	▲11VDC	0V.	▲-5.2VDC	0V.	0V.	▲300VDC	TOP CAP *
V 26	5V4G	0V.	380VDC	0V.	280VDC	270VDC	280VDC	290VDC	380VDC	
V 27	1B3GT		* DO NOT MEASURE.							
V 28	1B3GT		* DO NOT MEASURE.							
V 29	5U4G	0V.	290VDC	0V.	380VAC	0V.	380VAC	0V.	290VDC	
V 30	5U4G	0V.	290VDC	0V.	380VAC	0V.	380VAC	0V.	290VDC	
† V31	6AG5	0V.	.9VDC	0V.	6.3VAC	120VDC	120VDC	.9VDC		
† V32	12AT7	120VDC	0V.	2.8VDC	6.3VAC	6.3VAC	130VDC	§-5.2VDC	0V.	0V.
♦ V33	6BA6	-.6VDC	0V.	0V.	6.3VAC	95VDC	125VDC	.6VDC		
♦ V34	6BE6	§-.13VDC	0V.	0V.	6.3VAC	125VDC	125VDC	-.5VDC		
♦ V35	6BA6	-.4VDC	0V.	0V.	6.3VAC	125VDC	125VDC	1VDC		
V36	6E5									
V37	16DP4	0V.	■.4VDC	PIN 10 270VDC	PIN 11 0V.	PIN 12 6.3VAC				

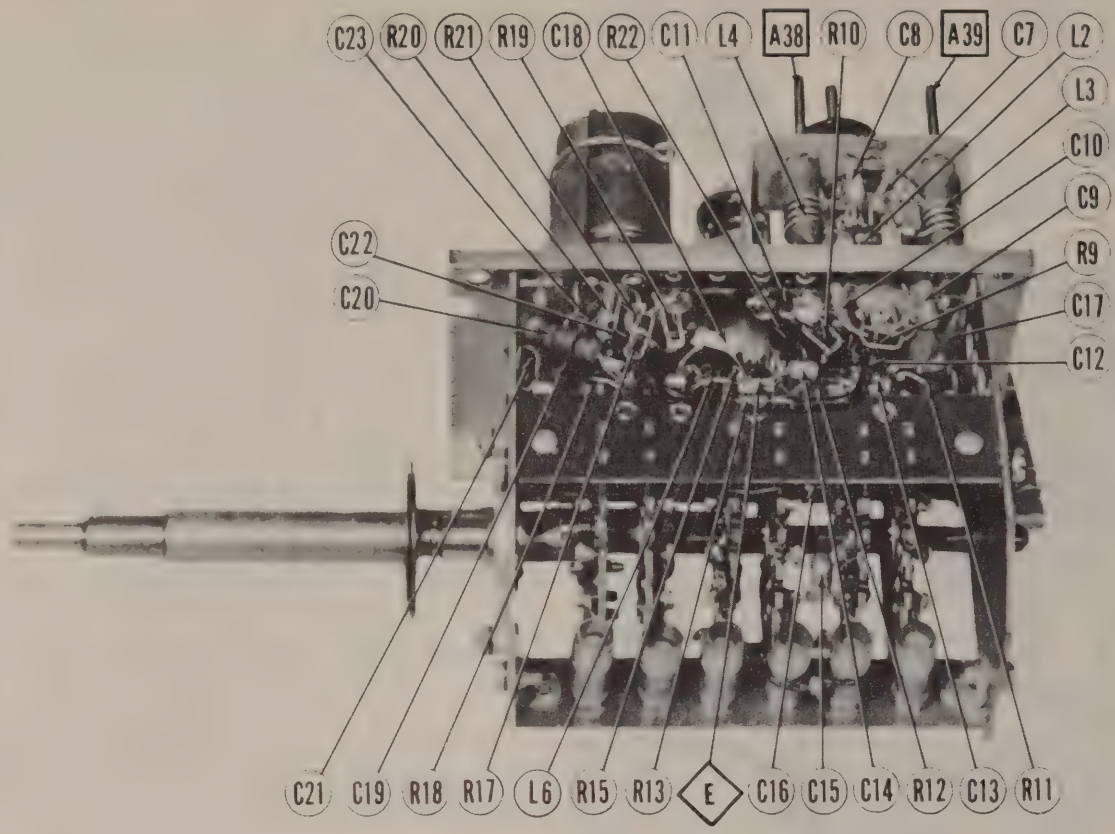
NOTE: CONTRAST CONTROL SET AT MAXIMUM FOR THESE MEASUREMENTS.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
♦ TAKEN IN "AM" POSITION.
† TAKEN IN "FM" POSITION.
* DO NOT MEASURE.
▲ MEASURED FROM PIN 6 OF V19.

RESISTANCE READINGS

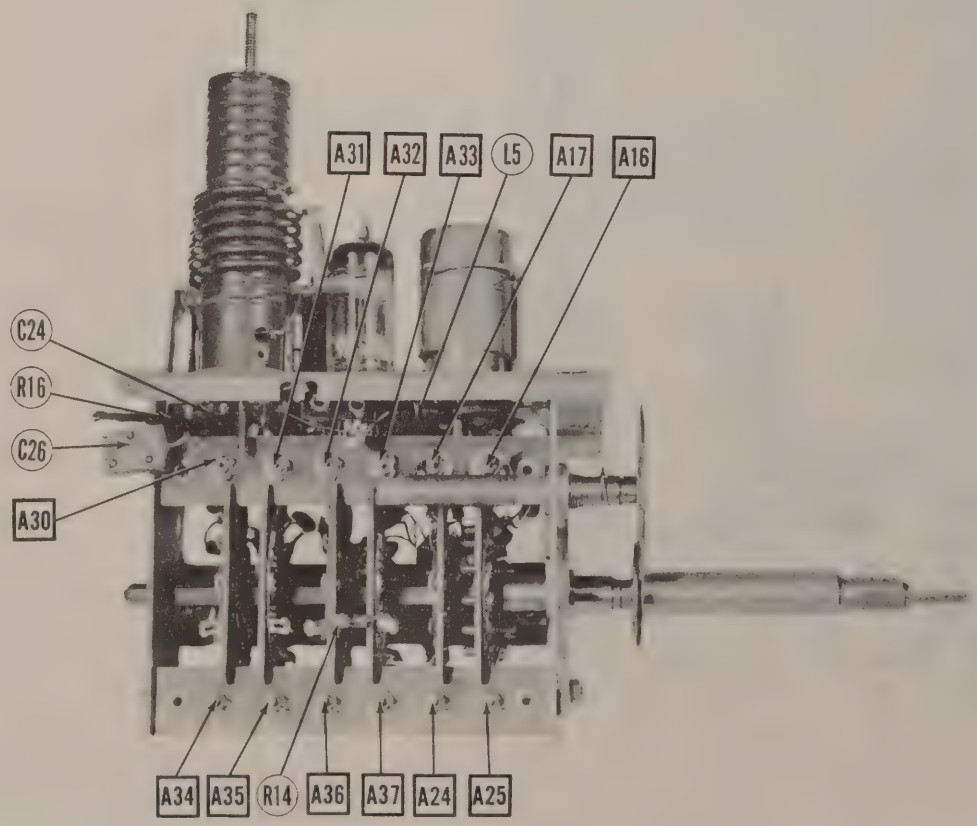
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†5.2KΩ	†5.2KΩ	.1Ω	0Ω	12KΩ	12KΩ	0Ω		
V 2	6J6	†2.5KΩ	†2.5KΩ	.1Ω	0Ω	1 Meg.	1 Meg.	0Ω		
V 3	6J6	†6.4KΩ	†6.4KΩ	.1Ω	0Ω	100KΩ	100KΩ	47Ω		
V 4	6AG5	19KΩ	39Ω	0Ω	.1Ω	†2.8KΩ	†2.8KΩ	39Ω		
V 5	6AG5	17KΩ	39Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	39Ω		
V 6	6AG5	10KΩ	39Ω	.1Ω	0Ω	†5.2KΩ	†2.5KΩ	39Ω		
V 7	6AG5	.2Ω	150Ω	.1Ω	0Ω	†8KΩ	†2.4KΩ	150Ω		
V 8	6AL5	.2Ω	200KΩ	.1Ω	0Ω	1.5 Meg.	0Ω	3.9KΩ		
V 9	6AU6	470KΩ	0Ω	0Ω	.1Ω	†10KΩ	†1.3KΩ	0Ω		
V 10	6K6GT	0Ω	0Ω	†4.6KΩ	†1.3KΩ	550KΩ	Inf.	.1Ω	330Ω	
V 11	6BA6	0Ω	0Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	100Ω		
V 12	6BA6	470KΩ	0Ω	.1Ω	0Ω	†2.3KΩ	†4.6KΩ	100Ω		
V 13	6AU6	22KΩ	0Ω	0Ω	.1Ω	†7KΩ	†7KΩ	0Ω		
V 14	6AL5	200KΩ	100KΩ	1.5Ω	0Ω	0Ω	0Ω	100KΩ		
V 15	6AT6	10 Meg.	0Ω	0Ω	.1Ω	12KΩ	500KΩ	†330KΩ		
V 16	6K6GT	0Ω	.1Ω	†1.3KΩ	†1.1KΩ	270KΩ	150KΩ	0Ω	0Ω	
V 17	6SK7	0Ω	0Ω	0Ω	1 Meg.	0Ω	†2.3KΩ	.1Ω	†9.4KΩ	
V 18	6SH7	0Ω	0Ω	0Ω	900KΩ	0Ω	†1.3KΩ	.1Ω	†8KΩ	
V 19	6SN7GT	1 Meg.	†7KΩ	0Ω	▲220KΩ	†420KΩ	▲0Ω	.1Ω	0Ω	
V 20	6J5	0Ω	0Ω	#1.5 Meg. #270KΩ	65KΩ	2.5 Meg.	▲1 Meg.	.1Ω	▲0Ω	
V 21	6K6GT	Inf.	.1Ω	†2KΩ	†2KΩ	▲2.2 Meg.	5KΩ 500Ω	0Ω	▲6.8KΩ ▲1.8KΩ	
V 22	6AL5	1 Meg.	1.5 Meg.	0Ω	1.5Ω	12Ω	0Ω	1.5 Meg.		
V 23	6AC7	0Ω	0Ω	0Ω	1.5 Meg.	10Ω	†6KΩ	.1Ω	†20KΩ	
V 24	6K6GT	Inf.	0Ω	†5KΩ	†10KΩ	77KΩ	#28Ω	.1Ω	10Ω	
V 25	6BG6G	Inf.	.1Ω	▲100Ω	Inf.	▲220KΩ	Inf.	0Ω	†10KΩ	TOP CAP #110Ω
V 26	5V4G	Inf.	1.5 Meg.	Inf.	†44Ω	†80Ω	†44Ω	†0Ω	1.5 Meg.	
V 27	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #150Ω
V 28	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #Inf.
V 29	5U4G	Inf.	6.5KΩ	Inf.	▲15Ω	Inf.	▲14Ω	Inf.	6.5KΩ	
V 30	5U4G	Inf.	6.5KΩ	Inf.	▲15Ω	Inf.	▲14Ω	Inf.	6.5KΩ	
† V31	6AG5	0Ω	47Ω	0Ω	.1Ω	†2KΩ	†2KΩ	47Ω		
† V32	12AT7	†2KΩ	470KΩ	2.2KΩ	.1Ω	.1Ω	†2.3KΩ	15KΩ	.5Ω	0Ω
♦ V33	6BA6	1.5 Meg.	0Ω	0Ω	.1Ω	†4.6KΩ	†1.3KΩ	39Ω		
♦ V34	6BE6	22KΩ	.5Ω	0Ω	.1Ω	†1.3KΩ	†1.3KΩ	1.5 Meg.		
♦ V35	6BA6	1.5 Meg.	0Ω	0Ω	.1Ω	†1.3KΩ	†1.3KΩ	100Ω		
V36	6E5									
V37	16DP4	0Ω	1.5 Meg.	PIN 10 150KΩ	PIN 11 0Ω	PIN 12 .1Ω				

† TAKEN IN "FM" POSITION.
♦ TAKENI IN "AM" POSITION.
† MEASURED FROM PIN 8 OF V30.
# MEASURED FROM PIN 8 OF V26.
▲ MEASURED FROM PIN 6 OF V19.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

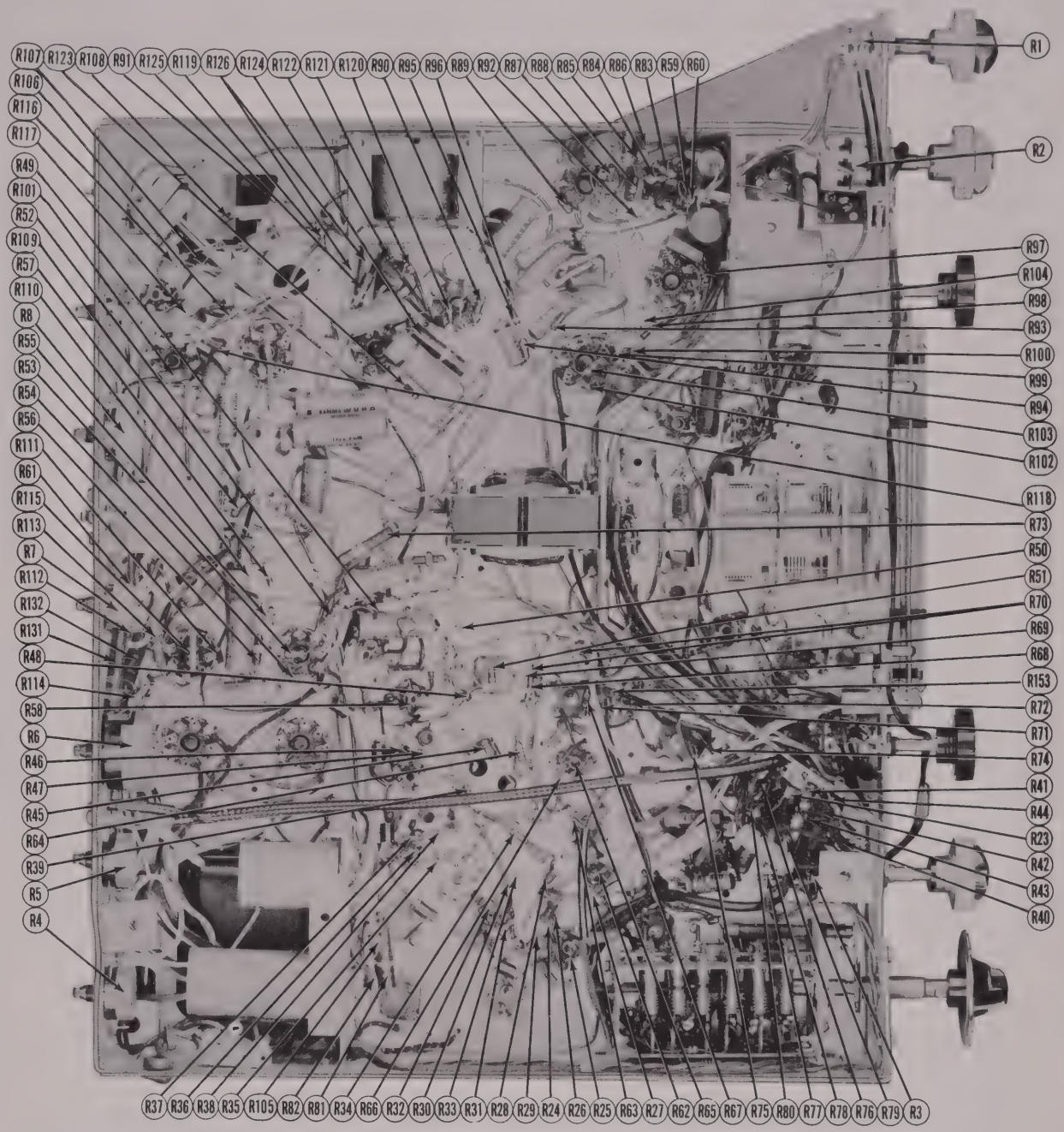


TV RF TUNER-RIGHT SIDE

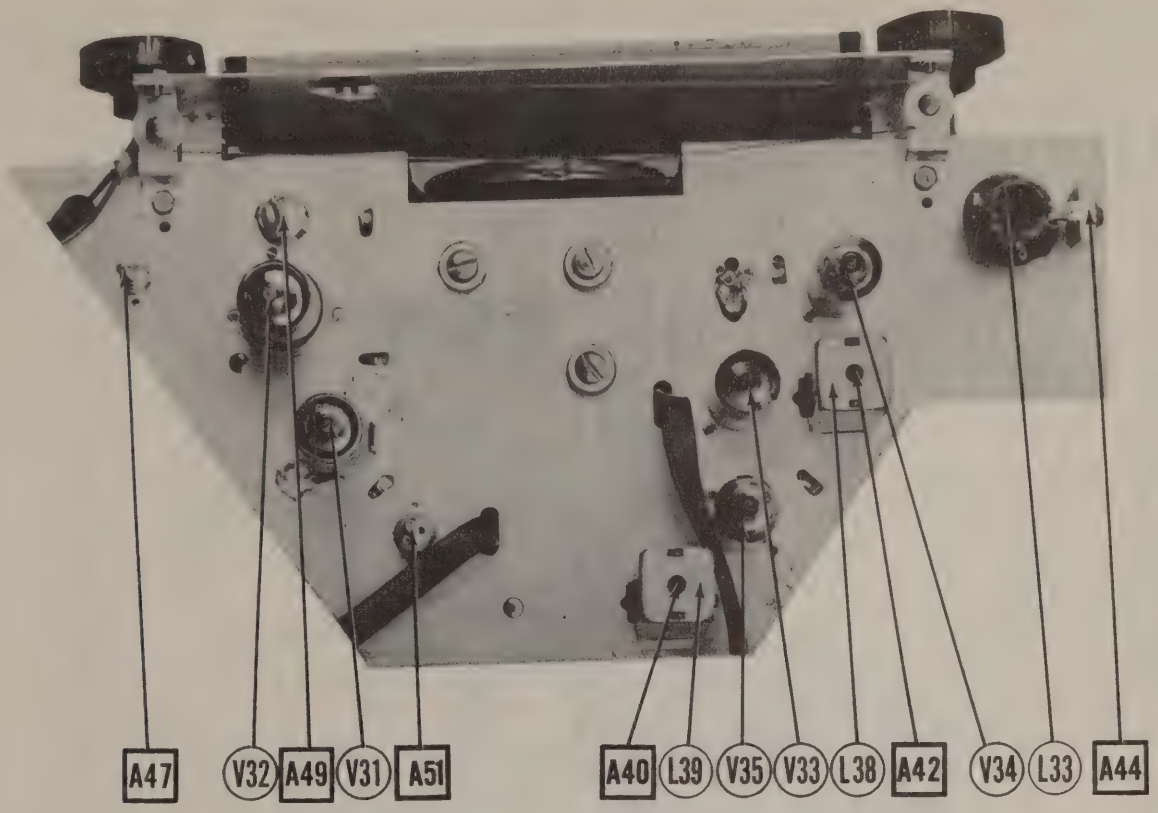


TV RF TUNER-LEFT SIDE

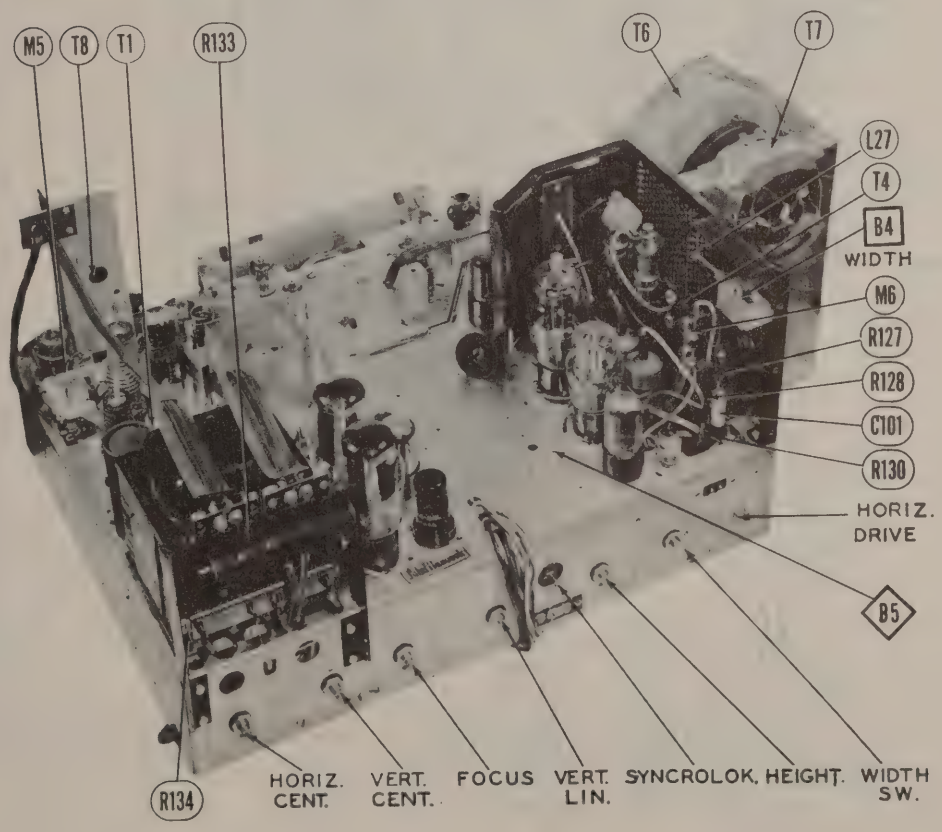
CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



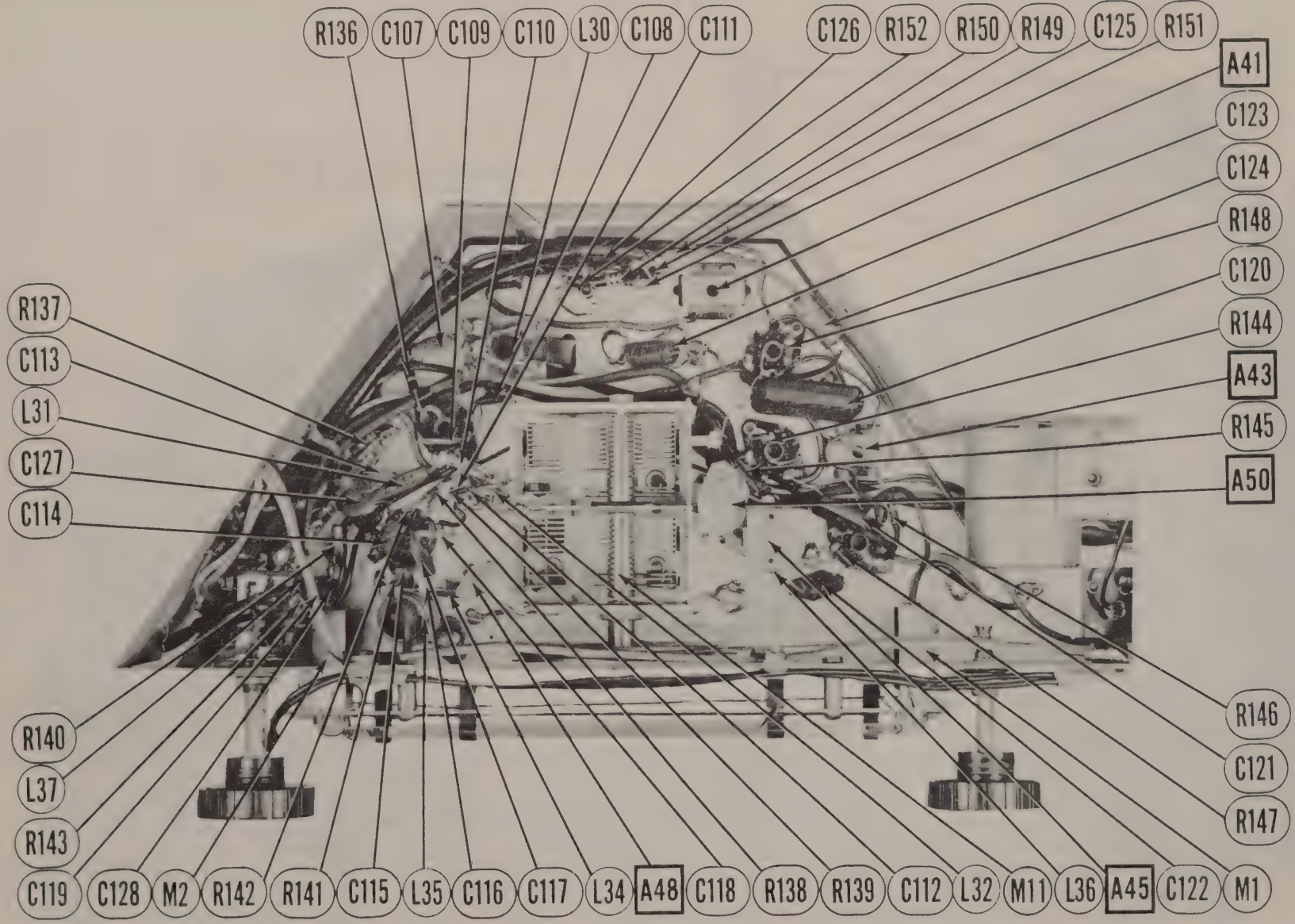
CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



FM-AM TUNER – TOP VIEW



TV CHASSIS – TOP VIEW



AM-FM TUNER-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		STARRETT PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6J6	6J6	7BF	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF	6AG5	6AG5	7BD	
V5	2nd Video IF	6AG5	6AG5	7BD	
V6	3rd Video IF	6AG5	6AG5	7BD	
V7	4th Video IF	6AG5	6AG5	7BD	
V8	Video Det. -DC Restorer	6AL5	6AL5	6BT	
V9	Video Amp.	6AU6	6AU6	7BK	
V10	Video Output	6K6GT	6K6GT	7S	
V11	1st Sound IF	6BA6	6BA6	7BK	
V12	2nd Sound IF	6BA6	6BA6	7BK	
V13	Limiter	6AU6	6AU6	7BK	
V14	Disc.	6AL5	6AL5	6BT	
V15	AF Amp. -Det. -AVC -Bias Clamper	6AT6	6AT6	7BT	
V16	Audio Output	6K6GT	6K6GT	7S	
V17	1st Sync. Amp.	6SK7	6SK7	8N	
V18	Sync. Sep.	6SH7	6SH7	8BK	
V19	2nd Sync. Amp. -Hor. Disch.	6SN7GT	6SN7GT	8BD	
V20	Vert. Osc. -Vert. Disch.	6J5	6J5	6Q	
V21	Vert. Output	6K6GT	6K6GT	7S	
V22	Hor. Sync. Disc.	6AL5	6AL5	6BT	
V23	Hor. AFC	6AC7	6AC7	8N	
V24	Hor. Osc.	6K6GT	6K6GT	7S	
V25	Hor. Output	6BG6G	6BG6G	5BT	
V26	Damper	5V4G	5V4G	5L	
V27	HV Rectifier	1B3GT	1B3GT	3C	
V28	HV Rectifier	1B3GT	1B3GT	3C	
V29	LV Rectifier	5U4G	5U4G	5T	
V30	LV Rectifier	5U4G	5U4G	5T	
V31	FM RF Amp.	6AG5	6AG5	7BD	
V32	FM Converter	12AT7	12AT7	9A	
V33	AM RF Amp.	6BA6	6BA6	7BK	
V34	AM Converter	6BE6	6BE6	7CH	
V35	AM IF Amp.	6BA6	6BA6	7BK	
V36	Tuning Ind.	6E5	6E5	6R	
V37	Picture Tube	16DP4	16DP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	STARRETT PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	450		AF82J16E			TVL-25	▲ Filter ■ Vert. Osc. Decoupling
B	10	450						▲ Filter
C	80	150					TVL-30	▲ Filter
C2A	40	450		AF882J				■ Filter
B	40	450						▲ Vert. Output Decoupling
C	10	450					TVL-18	▲ Filter
C3A	80	450		AF16J				▲ Vert. Output Cathode Bypass
B	50	50		PRS50/50			TVL-66	▲ Hor. Cent. Cont. Bypass
C4A	250	10		AF50R200S				▲ Vert. Cent. Cont. Bypass
B	1000	6					TVL-53	▲ Filter
C5A	40	450		AF82J2H				■ Low Pass Filter
B	10	450						▲ Decoupling
C	10	350					TVL-16	▲ Output Decoupling
C6A	20	450		AF164J				▲ Filter
B	80	350						Fixed Trimmer
C7	10			CN10DNPO	D2-10	NPOK-10		Fixed Trimmer
C8	10			CN10DNPO	D2-10	NPOK-10		RF Coupling
C9	270			GP270M	D6-271	GP2K-270		RF Coupling
C10	270			GP270M	D6-271	GP2K-270		Bias Filter
C11	1500.			GP1500M	D6-152	GP2L-0015		Neutralizing
C12	1.5			C11.5CNPO	D2-1.5	NPOK-1.5		Neutralizing
C13	1.5			C11.5CNPO	D2-1.5	NPOK-1.5		RF Coupling
C14	.68				D2-.68			RF Coupling
C15	5			CI5DN750		N750K-5		RF Coupling
C16	2.2				D2-2.2			RF Plate Decoupling
C17	1500			GP1500M	D6-152	GP2L-0015		Fixed Trimmer
C18	22			GP22K	D6-220	GP1K-22		Filament Bypass
C19	1500			GP1500M	D6-152	GP2L-0015		Osc. Decoupling
C20	1500			GP1500M	D6-152	GP2L-0015		Osc. Decoupling
C21	10			CI10DNPO	D2-10	NPOK-10		Osc. Feedback
C22	4.7			CN4.7DNPO	D2-4.7	NPOK-4.7		Osc. Feedback
C23	4.7			CN4.7DNPO	D2-4.7	NPOK-4.7		Mixer Decoupling
C24	1500			GP1500M	D6-152	GP2L-0015		Fixed Trimmer
C25	68			CN68JNPO	D2-68	NPO-333-68		IF Coupling
C26	270	500		1468-00025	D6-271	GP2K-270	1FM-325	Bias Filter
C27	1500			GP1500M	D6-152	GP2L-0015	1FM-215	1st V. IF Decoupling
C28	1500			GP1500M	D6-152	GP2L-0015	1FM-215	1st V. IF Decoupling
C29	1500			GP1500M	D6-152	GP2L-0015	1FM-215	1st V. IF Fil. Bypass
C30	1500			GP1500M	D6-152	GP2L-0015	1FM-215	Fixed Trimmer
C31	43	300			D2-43	NPO-333-43		IF Coupling
C32	270	500		1468-00025	D6-271	GP2K-270	1FM-325	Bias Filter
C33	1500			GP1500M	D6-152	GP2L-0015	1FM-215	2nd V. IF Decoupling
C34	1500			GP1500M	D6-152	GP2L-0015	1FM-215	2nd V. IF Decoupling
C35	1500			GP1500M	D6-152	GP2L-0015	1FM-215	2nd V. IF Fil. Bypass
C36	1500			GP1500M	D6-152	GP2L-0015	1FM-215	IF Coupling
C37	270	500		1468-00025	D6-271	GP2K-270	1FM-325	Bias Filter
C38	1500			GP1500M	D6-152	GP2L-0015	1FM-215	Bias Filter
C39	.25	400		P488-25			TC-2	3rd V. IF Decoupling
C40	1500			GP1500M	D6-152	GP2L-0015	1FM-215	3rd V. IF Decoupling
C41	1500			GP1500M	D6-152	GP2L-0015	1FM-215	3rd V. IF Fil. Bypass
C42	1500			GP1500M	D6-152	GP2L-0015	1FM-215	IF Coupling
C43	270	500		1468-00025	D6-271	GP2K-270	1FM-325	RF Bypass
C44	1500			GP1500M	D6-152	GP2L-0015	1FM-215	4th V. IF Decoupling
C45	1500			GP1500M	D6-152	GP2L-0015	1FM-215	4th V. IF Fil. Bypass
C46	1500			GP1500M	D6-152	GP2L-0015	1FM-215	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP	RATING VOLT	STARRETT PART No	REPLACEMENT DATA AEROVOX PART No	CENTRALAB PART No.	ERIE PART No	SPRAGUE PART No	IDENTIFICATION CODES AND INSTALLATION NOTES
C47	270	500		1468-0025	D6-271	GP2K-270	1FM-325	IF Coupling
C48	10	500		1468-0001	D6-100	GP1K-10	MS 4:	V. Diode Filter
C49	1500			GP1500M	D6-152	GP2L-0015	1FM-215	V. Det. Fil. Bypass
C50	.05	600		P688-05			TM-15	Video Coupling
C51	.05	600		P688-05			TM-15	Video Coupling
C52	.05	600		P688-05	D6-152		TM-15	Video Coupling
C53	.05	600		P688-05			TM-15	Video Coupling
C54	.25	400		P488-25			TC-2	DC Res. Plate Dec.
C55	470	500		1468-0005	D6-471	GP2K-470	1FM-35	2nd V. Amp. Cath. Bypass
C56	1500			GP1500M	D6-152	GP2L-0015	1FM-215	1st S. IF Cathode Bypass
C57	1500			GP1500M	D6-152	GP2L-0015	1FM-215	1st S. IF Decoupling
C58	.01	400		P488-01	D6-103	811-01	TM-11	2nd S. IF Grid Filter
C59	1500			GP1500M	D6-152	GP2L-0015	1FM-215	2nd S. IF Cath. Bypass
C60	1500			GP1500M	D6-152	GP2L-0015	1FM-215	2nd S. IF Screen Bypass
C61	1500			GP1500M	D6-152	GP2L-0015	1FM-215	2nd S. IF Plate Dec.
C62	5			GP5M	D6-500	GP1K-50	1FM-45	Limiter Grid Filter
C63	6800			GP6800M	D6-682	GP2-334-0068	TM-26	Limiter Decoupling
C64	270	500		1468-0025	D6-271	GP2K-270	1FM-325	RF Bypass
C65	.01	600		P688-01	D6-103	811-01	TM-11	Audio Coupling †
C66	.01	400		P488-01	D6-103	811-01	TM-11	Tone Compensation
C67	.01	400		P488-01	D6-103	811-01	TM-11	Audio Coupling
C68	250	500		1468-0025	D6-251	GP2K-250	1FM-325	Output Grid Bypass
C69	.01	600		P688-01	D6-103	811-01	TM-11	Tone Compensation
C70	.005	600		P688-005	D6-502	811-005	TM-25	Output Plate Bypass
C71	.05	600		P688-05			TM-15	Sync. Coupling
C72	270	500		1468-0025	D6-271	GP2K-270	1FM-325	1st Sync. Amp. Plate Bypass
C73	.1	600		P688-1			TM-1	1st Sync. Amp. Plate Dec.
C74	270	500		1468-0025	D6-271	GP2K-270	1FM-325	Sync. Coupling
C75	.05	600		P688-05			TM-15	Sync. Coupling
C76	.01	400		P488-01	D6-103	811-01	TM-11	Vert. Sync. Coupling
C77	.002	1000		P1088-002	D6-202	GP2M-002	TM-22	Integrator Net.
C78	.005	600		P688-005	D6-502	811-005	TM-25	Integrator Net.
C79	.005	600		P688-005	D6-502	811-005	TM-25	Integrator Net.
C80	4700	500		1467-005	D6-472	GP2M-0047	1FM-25	Vert. Osc. Grid Cap.
C81	.05	600		P688-05			TM-15	Vert. Discharge
C82	.1	600		P688-1			TM-1	Vert. Sweep Coupling
C83	82	500		1468-0001	D3-82	GP1K-100	1FM-31	Hor. Sync. Coupling
C84	.015	1000		P1088-015			MB-115	Fixed Trimmer
C85	.004	1000		P1088-004			MB-24	AFC Filter
C86	.05	600		P688-05			TM-15	AFC Filter
C87	.004	1000		P1088-004			MB-24	AFC Coupling
C88	1200					N2100-334-0012		Phase Shifter
C89	.015	1000		P1088-0015			MB-115	Phase Shifter
C90	.05	600		P688-05			TM-15	Hor. AFC Screen Bypass
C91	.004	1000		P1088-004			MB-24	Hor. Osc. Grid Cap.
C92	.05	600		P688-05			TM-15	Hor. Osc. Screen Bypass
C93	390	500		1468-0004	D6-391	GP2K-390	1FM-34	Differentiator Net.
C94	.01	400		P488-01	D6-103	811-01	TM-11	Hor. Sync. Coupling
C95	.001	1000		P1088-001			TR-21	Hor. Sync. Coupling
C96	.05	600		P688-05			TM-15	Hor. Output Screen Bypass
C97	.1	600		P688-1			TM-1	Hor. Output Cath. Bypass
C98	.035	1000		P1088-033				Damper Filter
C99	.05	1000		P1088-05			TR-15	Damper Filter
C100	.05	1000		P1088-05			TR-15	Damper Filter *
C101	.02	600		P688-02			TM-12	Fixed Trimmer
C102	500	10000		HV-500	TV1-501			HV Filter
C103	500	10000		HV-500	TV1-501			HV Filter
C104	500	10000		HV-500	TV1-501			HV Filter
C105	.01	600		P688-01	D6-103	811-01	TM-11	Line Filter
C106	.01	600		P688-01	D6-103	811-01	TM-11	Line Filter
C107	5000			BPD-5	D6-502	811-005	29C1	Ant. Isolation
C108	5000			BPD-5	D6-502	811-005	29C1	FM RF Cathode Bypass
C109	5000			BPD-5	D6-502	811-005	29C1	FM RF Screen Bypass
C110	50			GP50M	D6-500	GP1K-50	1FM-45	RF Coupling
C111	50			GP50M	D6-500	GP1K-50	1FM-45	RF Coupling
C112	5000			BPD-5	D6-502	811-005	29C1	FM Conv. Cathode Bypass
C113	5000			BPD-5	D6-502	811-005	29C1	FM Conv. Plate Decoupling
C114	3		300		D2-3.2			Osc. Coupling
C115	50			GP50M	D6-500	GP1K-50	1FM-45	Osc. Grid Cap.
C116	50			CN50JN750	DN-51	M750L-47	MS-45	Fixed Padder
C117	5000			BPD-5	D6-502	811-005	29C1	Osc. Plate Bypass
C118	5000			BPD-5	D6-502	811-005	29C1	Osc. Filament Bypass *
C119	250	500		1468-0025	D6-251	GP2K-250	1FM-325	IF Coupling
C120	.25	600		P688-25			TC-2	RF Bypass
C121	100	500		1468-0001	D6-101	GP1K-100	1FM-31	RF Coupling
C122	100	500		1468-0001	D6-101	GP1K-100	1FM-31	Osc. Grid Cap.
C123	.05	300		P288-05			TM-15	AVC Filter
C124	.05	200		P288-05			TM-15	IF Cathode Bypass
C125	100	500		1468-0001	D6-101	GP1K-100	1FM-31	Diode RF Filter
C126	100	500		1468-0001	D6-101	GP1K-100	1FM-31	Diode RF Filter
C127	5000			BPD-5	D6-502	811-005	29C1	FM RF Decoupling *
C128	5000			BPD-5	D6-502	811-005	29C1	RF Bypass *
C129	.005	600		P688-005	D6-502	811-005	TM-25	Audio Coupling
C130	82	300		1468-0001	D6-101	GP1K-100	1FM-31	4th V. IF Cath. Bypass
C131	1500			GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass *

* Not used in all models.
† Some models use .0025MFD in this application.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	STARRETT PART No	REPLACEMENT DATA IRC PART No	CLAROSTAT PART No	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ			B11-133 *			Tone control -panel
B	500Ω			B11-123 *			Brightness control-rear
C	Shaft End			E-187 *			Attach per instructions in "Concentrikit".
R2A	1 Meg.			B11-137 *			Vert. hold control-panel
B	500Ω			B11-123 *	970111-8		Horiz. hold control-rear
C	Shaft End			E-187 *			Attach per instructions in "Concentrikit".
R3A	10KΩ			B17-116 *			Contrast control-panel
B	1 Meg.			B13-137X *	970111-7		Volume control, tap @ 200KΩ-rear
C	Shaft End			E-187 *			Attach per instructions in "Concentrikit".
D	Switch			T6 † *			Attach per instructions in "Concentrikit".
R4	300Ω	2		W-20	43-20	V-110	Horiz. centering control-Wire Wound

CONTROLS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	STARRETT PART No	REPLACEMENT DATA IRC PART No	CLAROSTAT PART No	CENTRALAB PART No.	INSTALLATION NOTES
R5	20Ω	2		W-20 x 10	43-20 CT		Vert. centering control-Wire Wound-tapped at 10Ω
R6	1500Ω	4			10-1500		Focus control-Wire Wound
R7A	5000Ω	½		Q11-114	M-19-S	AN-10	Vert. linearity control
B	Shaft			Not Req.	Not Req.	AK-1	Attach to R7A per instructions
R8A	2.5 Meg.	½		Q11-235	M-84-S	AN-83	Height control
B	Shaft			Not Req.	Not Req.	AK-1	Attach to R8A per instructions

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	STARRETT PART No	REPLACEMENT DATA IRC PART No	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R9	150Ω				RF Grid
R10	150Ω				RF Grid
R11	4700Ω	20%		BTS-4700	RF Plate
R12	4700Ω	20%		BTS-4700	RF Plate
R13	1000Ω	20%		BTS-1000	RF Plate Decoupling
R14	10KΩ			BTS-10K	Mixer Grid Shunt
R15	1 Meg.	20%			Mixer Grid
R16	1000Ω	20%		BTS-1000	Mixer Plate Decoupling
R17	150Ω				Decoupling Network
R18	4700Ω	20%		BTS-4700	Osc. Plate
R19	47Ω	20%			Osc. Cathode
R20	100KΩ	20%			Osc. Grid
R21	100KΩ	20%			Osc. Grid
R22	1000Ω	20%		BTS-1000	Bias Network
R23	680KΩ			BTS-680K	Voltage Divider
R24	10KΩ				1st Video IF Grid
R25	39Ω				1st Video IF Cathode
R26	1000Ω			BTS-1000	1st Video IF Decoupling
R27	150Ω				Decoupling Network
R28	150Ω				Decoupling Network
R29	1000Ω			BTS-1000	Bias Network
R30	1000Ω			BTS-1000	Bias Network
R31	10KΩ				2nd Video IF Grid
R32	39Ω				2nd Video IF Cathode
R33	1000Ω			BTS-1000	2nd Video IF Decoupling
R34	150Ω				Decoupling Network
R35	4700Ω			BTS-4700	3rd Video IF Grid
R36	39Ω				3rd Video IF Cathode
R37	2700Ω			BTS-2700	3rd Video IF Plate
R38	1000Ω			BTS-1000	3rd Video IF Decoupling
R39	150Ω				Decoupling Network
R40	10KΩ			BTS-10K	Bias Network
R41	2700Ω			BTS-2700	Bias Voltage Divider
R42	18KΩ			BTS-18K	Bias Network
R43	8200Ω			BTS-8200	Bias Network
R44	680Ω			BTS-680	Voltage Divider
R45	150Ω				4th Video IF Cathode
R46	5600Ω			BTS-5600	4th Video IF Plate
R47	1000Ω			BTS-1000	4th Video IF Decoupling
R48	3900Ω			BTS-3900	Video Det. Diode Load
R49	470KΩ			BTS-470K	Video Amp. Grid
R50	3300Ω			BTS-3300	Video Amp. Plate
R51	6800Ω			BTS-6800	Low Pass Filter
R52	1.2 Meg.			BTS-1.2 Meg.	Bias Network
R53	820KΩ	5%		BTS-820K-5%	Video Output Grid
R54	330Ω				Video Output Cathode
R55	3300Ω	1		BTA-3300	Video Output Plate
R56	10KΩ			BTS-10K	Isolation
R57	100KΩ			BTS-100K	Picture Tube Grid
R58	1 Meg.			BTS-1 Meg.	DC Rest. Load
R59	47KΩ			BTS-47K	Voltage Divider
R60	150KΩ			BTS-150K	Voltage Divider
R61	150KΩ			BTS-150K	Acc. Anode Decoupling
R62	100Ω				1st Sound IF Cathode
R63	1000Ω			BTS-1000	1st Sound IF Decoupling
R64	470KΩ				2nd Sound IF Grid
R65	100Ω				2nd Sound IF Cathode
R66	3300Ω			BTS-3300	2nd Sound IF Screen
R67	1000Ω			BTS-1000	2nd Sound IF Plate Decoupling
R68	82KΩ			BTS-82K	Voltage Divider
R69	270KΩ			BTS-270K	Voltage Divider
R70	22KΩ				Limiter Grid-See Note 1
R71	10KΩ	1			Limiter Decoupling
R72	10KΩ			BTS-10K	Voltage Divider
R73	2.2Ω			BW-1-2.2	Disc. Filament-Wire Wound
R74	100KΩ			BTS-100K	Disc. Diode Load
R75	100KΩ			BTS-100K	Disc. Diode Load
R76	22KΩ			BTS-22K	De-emphasis
R77	27KΩ			BTS-27K	Tone Compensation
R78	10 Meg.			BTS-10 Meg.	AF Grid
R79	330KΩ	5%		BTS-330K-5%	AF Plate
R80	270KΩ			BTS-270K	Output Grid
R81	2200Ω	2		BT-2-2200	Filter
R82	2200Ω	2		BT-2-2200	Filter
R83	6.8 Meg.			BTS-6.8 Meg.	Bias Network
R84	1 Meg.			BTS-1 Meg.	1st Sync. Amp. Grid
R85	4700Ω	1		BTA-4700	1st Sync. Amp. Plate
R86	4700Ω	1		BTA-4700	1st Sync. Amp. Plate Decoupling
R87	4.7 Meg.			BTS-4.7 Meg.	Bias Network
R88	1 Meg.			BTS-1 Meg.	Sync. Sep. Grid
R89	6800Ω			BTS-6800	Sync. Sep. Plate
R90	1 Meg.			BTS-1 Meg.	2nd Sync. Amp. Grid
R91	4700Ω			BTS-4700	2nd Sync. Amp. Plate
R92	1000Ω			BTS-1000	Decoupling
R93	22KΩ			BTS-22K	Voltage Divider
R94	22KΩ			BTS-22K	Integrator
R95	8200Ω			BTS-8200	Integrator
R96	8200Ω			BTS-8200	Integrator
R97	1.5 Meg.	5%		BTS-1.5 Meg-5%	Vert. Osc. Grid
R98	100KΩ			BTS-100K	Voltage Divider
R99	2.2 Meg.			BTS-2.2 Meg.	Voltage Divider
R100	220KΩ			BTS-220K	Vert. Osc. Plate

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	STARRETT PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R101	56KΩ	1		BTA-56K	Filter
R102	8200Ω	½		BTS-8200	Vert. Peaking
R103	1800Ω	½		BTS-1800	Vert. Output Cathode
R104	2.2 Meg.	½		BTS-2.2 Meg.	Vert. Output Grid
R105	2000Ω	5% 2			Vert. Output Decoupling
R106	470KΩ	½		BTS-470K	Horiz. Sync. Disc. Load
R107	470KΩ	½		BTS-470K	Horiz. Sync. Disc. Load
R108	1 Meg.	½		BTS-1 Meg.	Horiz. Sync. Disc. Load
R109	470KΩ	½		BTS-470K	Horiz. AFC Filter Network
R110	560Ω	½		BTS-560	Horiz. AFC Grid
R111	10Ω	½			Horiz. AFC Cathode
R112	47KΩ	2		BT-2-47K	Horiz. AFC Plate
R113	39KΩ	1		BTA-39K	Horiz. AFC Plate
R114	39KΩ	1		BTA-39K	Horiz. AFC Screen
R115	27KΩ	1		BTA-27K	Voltage Divider
R116	27KΩ	½		BTS-27K	Horiz. Osc. Grid
R117	5000Ω	10		AB-5000	Horiz. Osc. Plate-Wire Wound
R118	10KΩ	1		BTA-10K	Horiz. Osc. Screen
R119	6800Ω	½		BTS-6800	Differentiator
R120	220KΩ	½		BTS-220K	Horiz. Discharge Grid
R121	680KΩ	½		BTS-680K	Horiz. Discharge Plate
R122	1 Meg.	½		BTS-1 Meg.	Horiz. Discharge Plate
R123	220KΩ	½		BTS-220K	Horiz. Output Grid
R124	100Ω	2		BW-1-100	Horiz. Output Cathode
R125	10KΩ	1		BTA-10K	Horiz. Output Screen
R126	10KΩ	4		AB-10K	Horiz. Output Screen-See Note 1
R127	4.7Ω	1			HV Rect. Filament-Wire Wound-See Note 2
R128	4.7Ω	½			HV Rect. Filament-Wire Wound-See Note 2
R129	2 Meg.	4			HV Rect. Load
R130	150KΩ	1			HV Filter-See Note 3
R131	270Ω	5% 2		BW-2-270	Focus Coil Shunt-Wire Wound
R132	2000Ω	20% 2		BT-2-2200	Focus Coil Shunt-See Note 3
R133A	1360Ω	20			Filter-Wire Wound
B	230Ω	10			Bias Network-Wire Wound
R134A	93Ω	4			Bias Network-Wire Wound
B	12Ω	2			Bias Network-Wire Wound
C	6750Ω	5			Bleeder-Wire Wound
R135	56Ω	1		BW-1-56	Bias Network-See Note 3
R136	47Ω	½			FM RF Cathode
R137	680Ω	5% ½		BTS-680-5%	FM RF Decoupling
R138	470KΩ	20% ½		BTS-470K	FM Conv. Grid
R139	2200Ω	20% ½		BTS-2200	FM Conv. Cathode
R140	680Ω	5% ½		BTS-680-5%	FM Conv. Plate Decoupling
R141	15KΩ	½		BTS-15K	FM Osc. Grid
R142	1000Ω	½		BTS-1000	FM Osc. Plate Decoupling
R143	4700Ω	½		BTS-4700	1st Sound IF Grid-See Note 4
R144	39Ω	½		BW-½-39	AM RF Cathode
R145	3300Ω	20% ½		BTS-3300	AM RF Plate
R146	100KΩ	20% ½		BTS-100K	AM Conv. Grid
R147	22KΩ	½		BTS-22K	AM Osc. Grid
R148	100Ω	½		BW-½-100	AM IF Cathode
R149	47KΩ	½		BTS-47K	Diode Filter
R150	470KΩ	20% ½		BTS-470K	Diode Load
R151	2.2 Meg.	½		BTS-2.2 Meg.	AVC Network
R152	1 Meg.	½		BTS-1 Meg.	Tuning Indicator Grid
R153	2.2 Meg.	½		BTS-2.2 Meg.	Tuning Indicator Network
R154	1 Meg.	½		BTS-1 Meg.	Tuning Indicator Plate

Note 1. Some models use two resistors in parallel to obtain required resistance and wattage.
Note 2. Some models use 3.3Ω resistors in this application.
Note 3. Not used in all models.
Note 4. Some models use 6800Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.45A	730VCT .300ADC	5VAC @ 6A	5VAC @ 2A SEC. 4 12.6VCT @ 5A		P-8156 ①	P-3061 ①	TP-365 ①

① Drill new mounting hole.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	37Ω CT	350 Tap @ 9.5Ω					Hor. Sync. Disc. Trans.
T3	175Ω	950Ω		A-8121	A-4000	TBO-1	Vert. Block Osc. Trans.
T4	420Ω Tap @ 180Ω	SEC. 1 10.6Ω Tap @ .6Ω SEC. 2 0Ω SEC. 3 0Ω		A-8119	HVO-5	TFB-4	Hor. Output Trans.
T5	500Ω	6.9Ω		A-8115	A-3035	TSO-1	Vert. Output Trans.
T6A	14Ω			DY-1	MD-12		Hor. Deflection Coil
B	62Ω						Vert. Deflection Coil
T7	470Ω			MF-2			Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T8	3.1KΩ	7.2Ω	230Ω	.6Ω		A-3823	A-2902	RO-301	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	STARRETT PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.6Ω		12J12	12A4A	
SP2	PM	3.6Ω		57J9	57A1	
	CONE DIA.	V. C. DIA.				
SP3	11 1/2"	1"				
SP4	4 3/4" x 7"	3/4"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.280A	40Ω	1.5 Henries		C-2326	C-2991	TR-3300 ②	② Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	STARRETT PART No.	MEISSNER PART No.	
L2	Ant. Input	0Ω				
L3	Interference Trap	0Ω				
L4	Interference Trap	0Ω				
L5	Fil. Choke	0Ω				
L6	Mixer Grid Trap	0Ω				
L7	1st Video IF & Sound Trap	.2Ω	0Ω			
L8	Fil. Choke	0Ω				
L9	2nd Video IF	.2Ω				
L10	Fil. Choke	0Ω				
L11	3rd Video IF	.2Ω				
L12	Fil. Choke	0Ω				
L13	4th Video IF	.2Ω				
L14	Sound Trap	0Ω				
L15	Fil. Choke	0Ω				
L16	5th Video IF	.2Ω				
L17	Fil. Choke	0Ω				
L18	Peaking	6Ω			19-1921#	120 microhenries, wound on 22KΩ resistor.
L19	Peaking	8Ω			19-1922	250 microhenries
L20	Peaking	5Ω			19-1921#	120 microhenries, wound on 22KΩ resistor.
L21	Peaking	4.5Ω			19-1920	93 microhenries
L22	Peaking	5Ω			19-1921#	120 microhenries, wound on 22KΩ resistor
L23	Peaking	4.5Ω			19-1920	93 microhenries
L24	1st Sound IF	.2Ω	.2Ω			
L25	2nd Sound IF	.2Ω	.2Ω			
L26	Disc. Trans.	.2Ω	.2Ω			
L27	Width Cont.	.5Ω				
L28	Hor. Lin.	28Ω				
L29	AM Loop Ant.	1.5Ω				
L30	FM Ant. Tran.	0Ω	0Ω			
L31	FM RF Plate Choke	.5Ω				
L32	FM RF Coil	0Ω				
L33	Wave Trap	85Ω				
L34	FM Osc. Cath. Choke	.5Ω				
L35	FM Osc.	0Ω				
L36	AM Osc.	6.5Ω			14-1060	
L37	FM IF	.2Ω				
L38	AM 1st IF	16Ω	16Ω		16-6678	
L39	AM 2nd IF	10Ω	10Ω		16-6678	

Add 22KΩ resistor in parallel

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					STARRETT PART No.		
M1	Bayonet	6-8	.15	Brown			Type #47
M2	Bayonet	6-8	.15	Brown			Type #47
M3	Bayonet	6-8	.15	Brown			Type #47
M4	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	STARRETT PART No.	NOTES
M5	RF Tuner		
M6	Fuse		Type 3AG, .25A
M7	Switch		Width Selector
M8	Switch		TV-Phono-AM-FM
M9	Terminal Strip		Video Compensation
M10	Ion Trap		
M11	Tuning Cap.		(13-420MMF) (12-198MMF) WO/T
	Trimmer		Hor. Drive (150-850MMF)

HORIZONTAL OSCILLATOR ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT CHECK:

After turning the horizontal hold control to the maximum counter clockwise position, the picture should remain in horizontal sync. Remove the picture momentarily by turning the contrast control fully counter-clockwise and then return it to the normal operating position. This should pull the picture back into synchronization.

Now turn the horizontal hold control fully clockwise. The picture should remain in sync. Momentarily remove the signal and again the picture should pull into sync if receiver is functioning properly.

If the receiver functions properly under these checks it is not necessary to align the horizontal oscillator circuit. However, if the picture is not normal or stable, the horizontal oscillator must be aligned.

SLIGHT RETOUCH ALIGNMENT:

If the receiver failed in the above check to hold sync at either extreme of the hold control or after momentary removal of the signal, it may be possible to align the horizontal oscillator by making slight adjustments. If this fails it will be necessary to completely re-align the horizontal oscillator circuit.

Tune in a TV station and adjust tuning for best SOUND quality. Sync the picture and adjust the contrast control to slightly less then normal position. Turn the horizontal hold control to the point where the horizontal oscillator fails to hold or pull-in. Remove signal. Turn B1 frequency adjustment (located at rear of chassis)until oscillator pulls into sync. Now check the pull-in and hold for the other extreme of the horizontal hold control.

COMPLETE ALIGNMENT:

Tune in a TV station for the best SOUND quality. Adjust VERTICAL hold control to vertically sync the picture and adjust the contrast control to slightly less than normal. Turn B1 frequency adjustment until picture syncs horizontally. If blanking bar is present on picture adjust B2 (phasing adjust screw) until blanking bar moves to the right and off the raster. If ripples occur in the raster turn B2 in a clockwise direction until the unstable condition is removed. The length of this adjustment screw in its correct position is usually about 1/2 inch beyond the bushing.

Turn horizontal hold control fully counter-clockwise and adjust B1 until picture fails to sync. Now slowly turn B1 to the point whre the picture syncs again. Readjust B2 so that the left side or picture is close to the left side of the raster but does not fold over.

Turn horizontal hold fully clockwise. Right side of picture should be close to right side of raster but does not fold over. If picture does fold over, readjust B2.

When signal is restored after momentary removal of the signal, the picture should fall into sync. If picture fails to fall into sync turn B1 counter-clockwise until picture syncs in.

Turn horizontal hold fully counter-clockwise. Picture should fall back into sync. after momentary removal of signal.

If picture fails to pull in sync after momentary removals of the signal in both extremes of the horizontal hold control, there may not be a sufficient pull-in range, though not necessarily. A pull-in of 3/4 of the hold control range should be satisfactory.

Excessive pull-in is objectionable because high control circuit sensitivity gives greater reaction to noise pulses. This may also affect the vertical sync and equalizing pulses which tend to cause a bend in the top portion of the raster.

HORIZONTAL LINEARITY ADJUSTMENTS

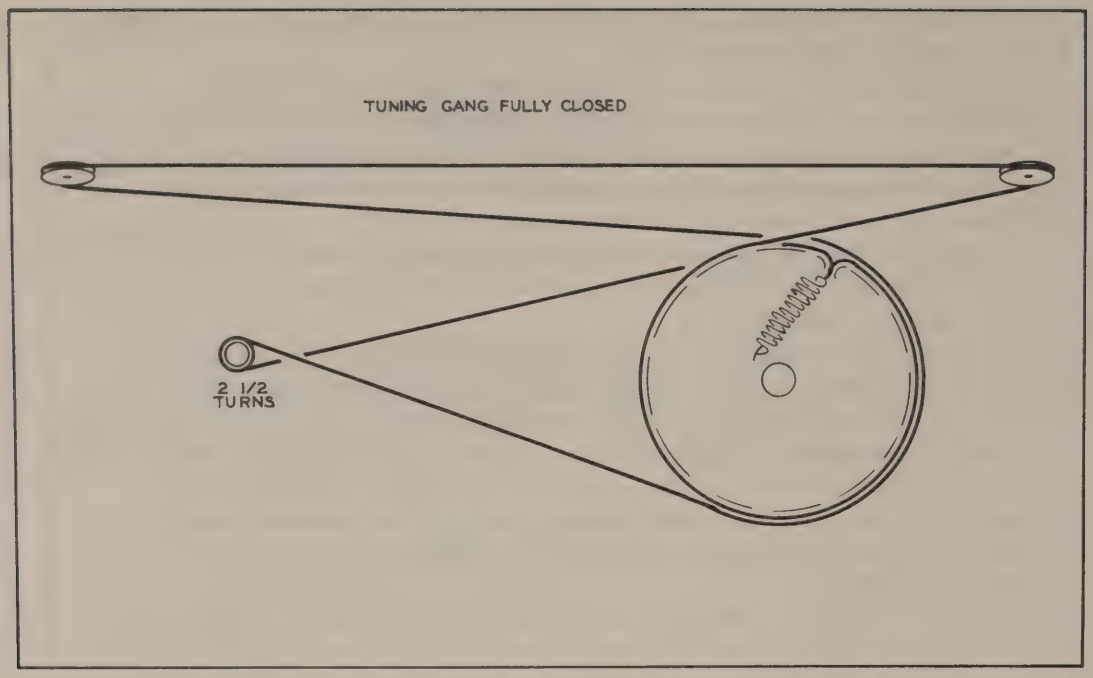
Turn the horizontal drive trimmer (B3) clockwise as far as possible without crowding the right half of the picture.

Turn the width switch to maximum counter-clockwise.

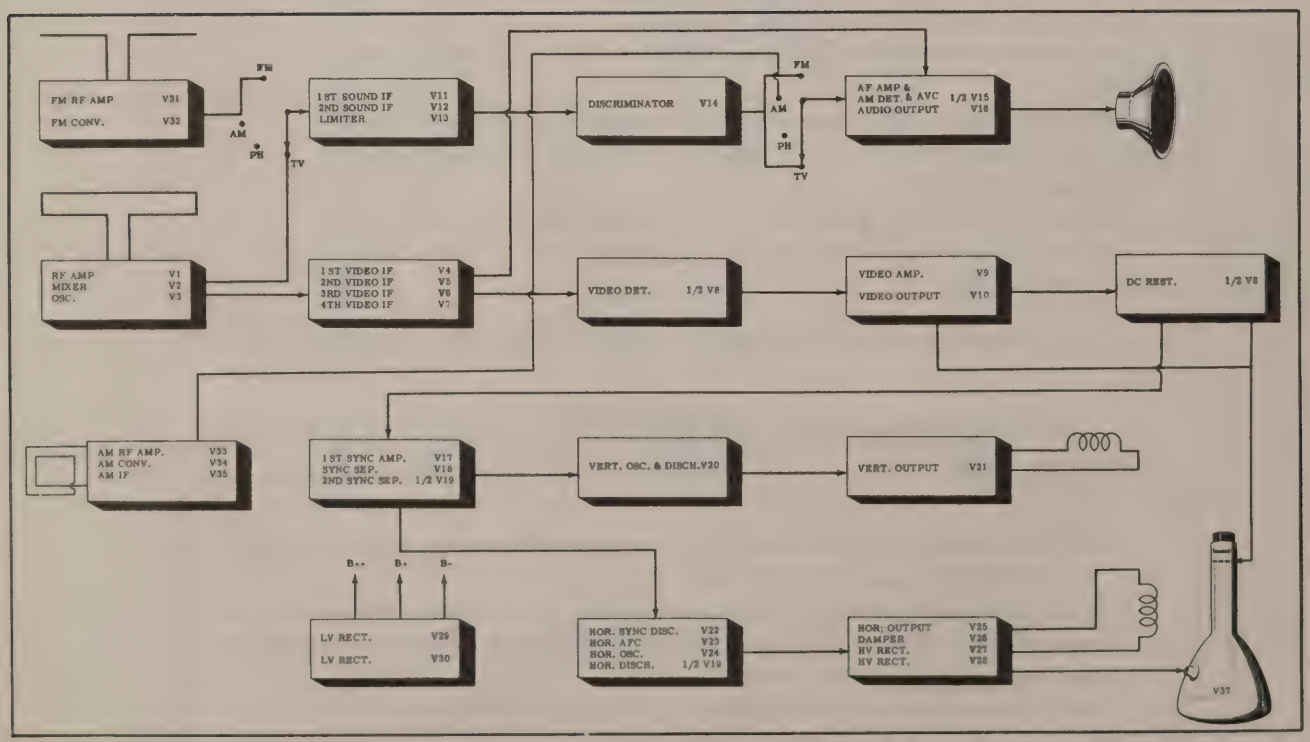
Adjust the width slug (B4) until the picture fills the mask horizontally,. If sufficient width can not be obtained turn the width switch clockwise until proper width is obtained. Note that the width control B4 is disconnected on all positions of the width switch except maximum counter-clockwise.

Adjust the horizontal linearity slug (B5) until the picture is symmetrical from left to right.

Readjustment of B3 may be ncesssary.



DIAL CORD STRINGING



BLOCK DIAGRAM

PHOTOFACT* Folder

*TRADE MARK

SYLVANIA MODELS

1-076 (CH. 1-108), 1-128 (CH. 1-108)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 1-128

SYLVANIA MODELS

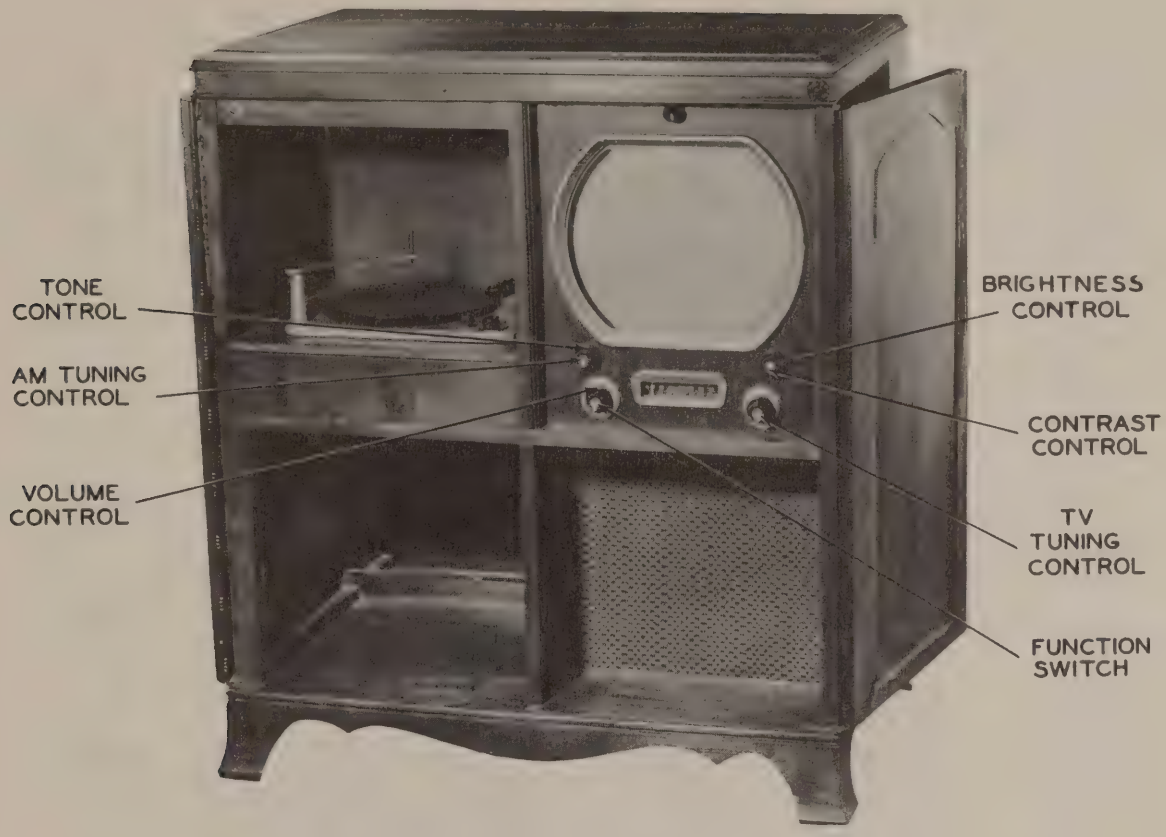
1-076 (CH. 1-108), 1-128 (CH. 1-108)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

Date 5/50 Set No. 96—Folder No. 11

SYLVANIA MODELS 1-076, 1-128 (Ch. 1-108)



SYLVANIA MODELS 1-076, 1-128 (Ch. 1-108)

SYLVANIA MODEL 1-128

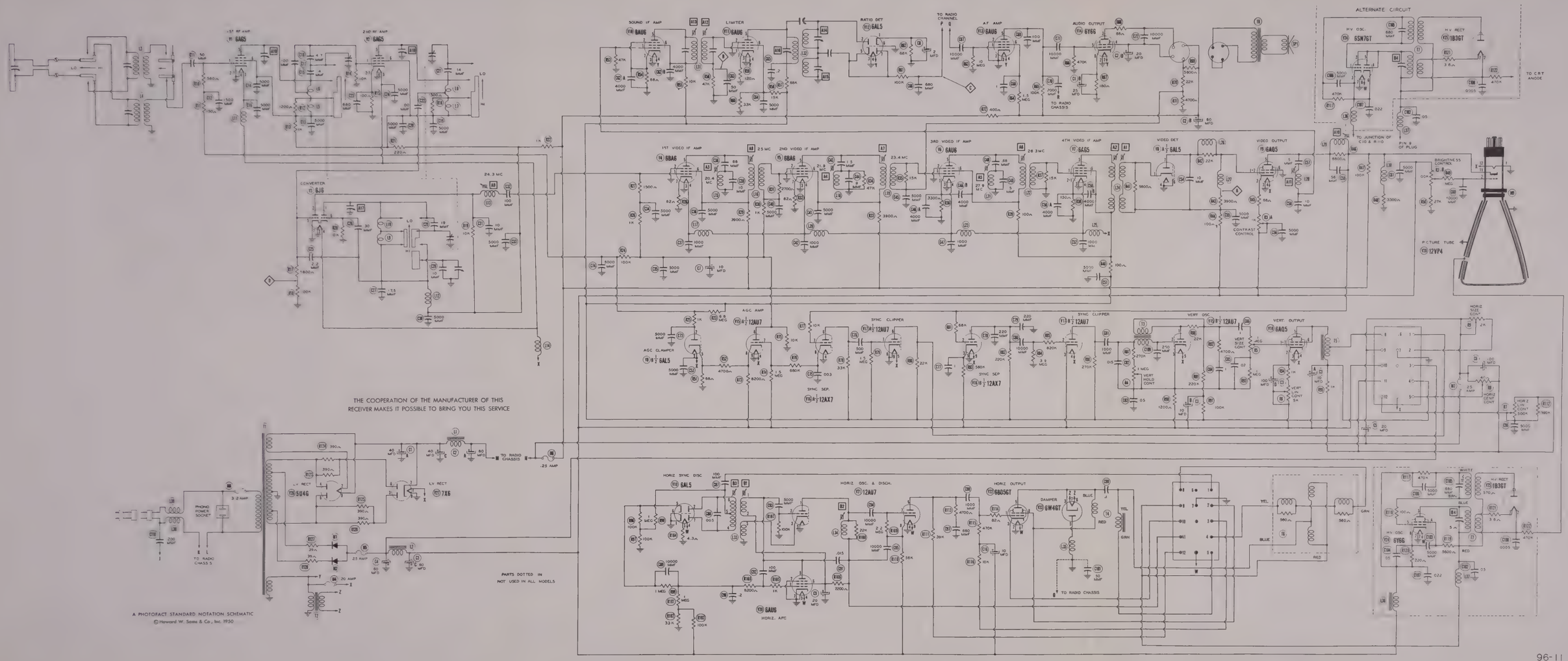
TRADE NAME	Sylvania, Models 1-076, 1-128 (Ch. 1-108)
MANUFACTURER	Sylvania Elect. Prod. Inc., Colonial Radio and Tel. Div., 254 Rand St., Buffalo 7, New York
TYPE SET	TV-AM-FM-Phono Receiver
TUBES	Thirty Two
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2.63 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC FREQ. MOD. 88-108MC TV Channels 2 thru 13

INDEX

Alignment Instructions 6, 7
Block Diagram 14
Disassembly Instructions 23
Drive Cord Stringing 23
Horiz. Sweep Circuit Adjustment 23
Parts List and Description ..... 15 thru 19
Photographs
Capacitor Identification 11, 22
Chassis-Top View 3, 14
Deflection Sub-Chassis 10
Photographs (continued)
High Voltage Supply 19
RF Tuner (TV) 10
Resistor Identification 12, 17
Trans., Inductor and Alignment Identification 4, 9
Schematic (TV) 2
Schematic (Radio Tuner) 13, 20
Tube Placement Chart 5
Voltage and Resistance Measurements 8

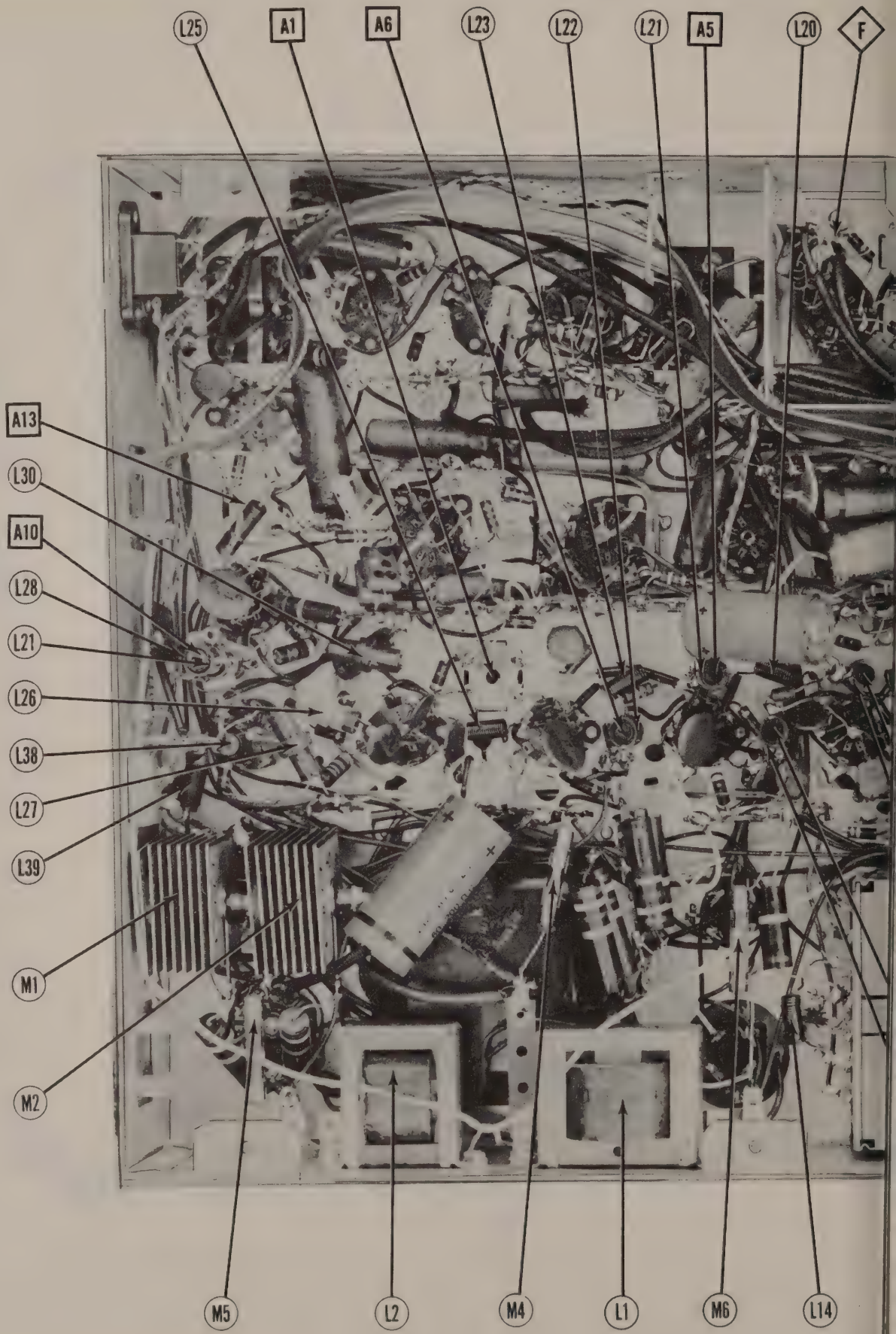
HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

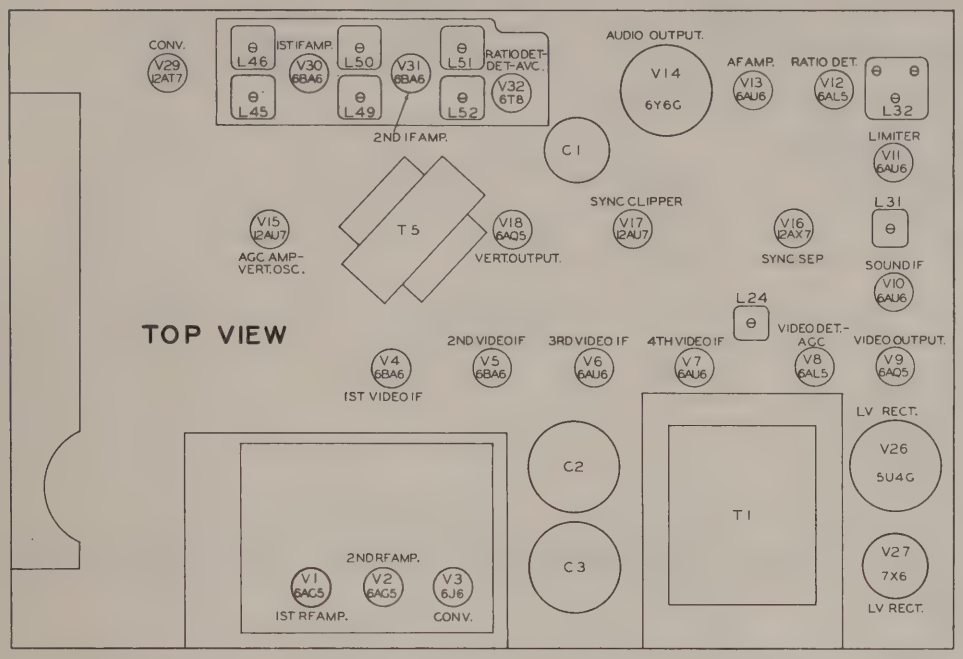


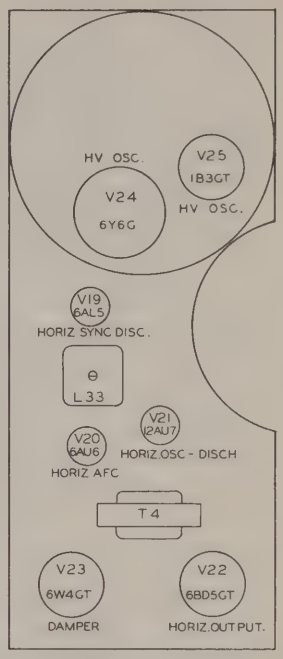
SYLVANIA MODELS
1-076, 1-128 (Ch. 1-108)

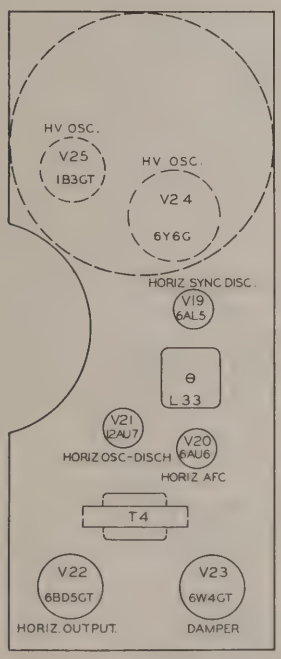
CHASSIS TOP VIEW

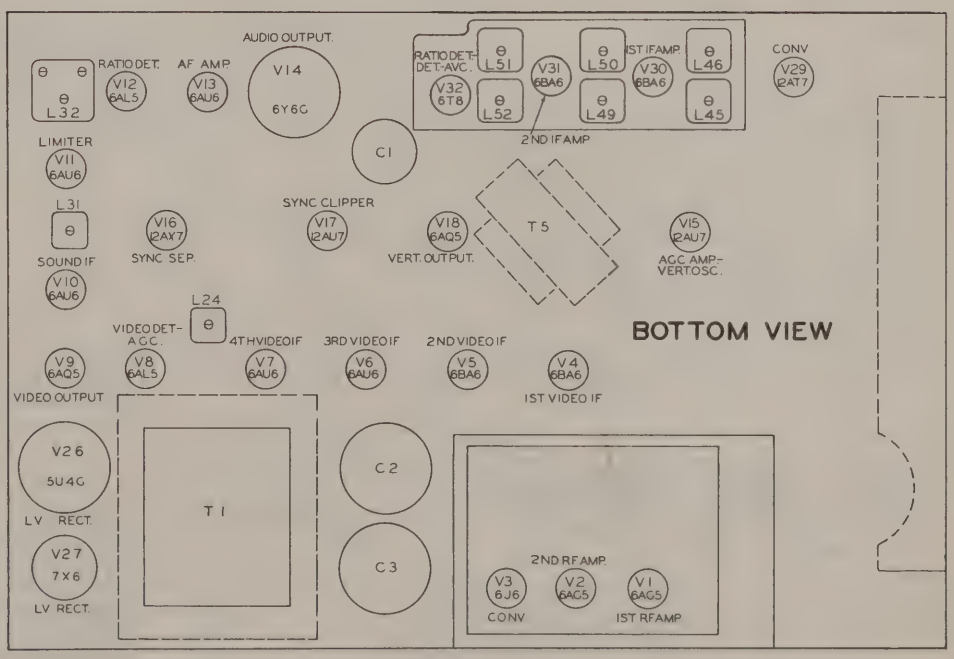


CHASSIS BOTTOM VIEW-TRANS., IN









TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the high voltage oscillator tube (V24) from its socket.
Turn the function selector switch to "Television" (second position clockwise).

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to pin 3 of V8 socket, connect the positive lead to chassis.
During video IF alignment the negative lead of the VTVM is connected to approximately 125 volts negative with respect to chassis. Avoid grounding or touching the VTVM case.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Remove the converter tube (V3) and replace it with a 6J6 which has had pin 1 removed.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005MFD	High side to pin 1 (Grid) of 6AQ5 (V7). Low side to chassis.	24MC (10MC SWP)	21.9MC 27.4MC	Any	Vert. Amp. to point (A). Low side to chassis.	A1, A2	Adjust for response curve similar to figure 1 with markers as shown.
2.	Direct	High side to ungrounded tube shield floating over converter tube (V3). Low side to chassis.	Not used	20.4MC (Unmod.)	"	Use VTVM. DC probe and common leads across R43.	A3	Adjust for MINIMUM deflection.
3.	Direct	"	"	21.9MC	"	"	A4	"
4.	Direct	"	"	27.9MC	"	"	A5	"
5.	Direct	"	"	26.3MC	"	"	A6	Adjust for maximum deflection.
6.	Direct	"	"	23.4MC	"	"	A7	"
7.	Direct	"	"	25MC	"	"	A8	"
8.	Direct	"	"	24.3MC	"	"	A9	"
9.	Direct	"	24MC (10MC SWP)	23.1MC 26.4MC	"	Vert. Amp. to point (A). Low side to chassis.		Check for response curve similar to figure 2. If necessary retouch A6 thru A9 for optimum response.

4.5MC TRAP ADJUSTMENT

Pre-set All to maximum counter-clockwise (fully out).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.005MFD	High side to pin 7 (Grid) of 6AQ5 (V9). Low side to chassis.	4.1MC	Any	RF Probe to pin 11 (cathode) of picture tube. Common to chassis.	A10	Adjust for maximum deflection.
11.	005MFD	"	4.5MC (max. output)	"	"	A11	Adjust for minimum deflection.

SOUND IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	.005MFD	High side to pin 1 (Grid) of 6AQ5 (V9). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any channel not used locally	Vert. Amp. to thru 10KΩ to point (B). Low side to chassis.	A12, A13	Adjust for maximum amplitude and symmetry as per figure 3.
13.	.005MFD	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A14, A15, A16	Adjust A14 and A15 so 4.5MC occurs at the center of the diagonal line. Adjust A16 for maximum amplitude and straightness of diagonal line.

RF ALIGNMENT

Connect the three volt bias battery as outlined under video IF alignment.
The two trimmer capacitors located near the front of the tuner are for the purpose of adjusting the antenna input circuit. These trimmers are pre-set at the factory and sealed. They should not be adjusted in the field.
Remove the dummy converter tube and replace the original tube.

HIGH BAND OSCILLATOR ALIGNMENT

Turn the tuner switch to "HIGH BAND" (counter-clockwise.)
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	215MC (10MC SWP)	21.9MC 217.25MC	Turn tuning gang open.	Vert. Amp. to point (D). Low side to chassis.	A17	Adjust so the 21.9MC and 217.25MC marker coincide at 100% response as per figure 5.
15.	"	"	177MC (10MC SWP)	21.9MC 177.25MC	Tuning gang fully closed.	"	L10	Expand or compress coil turns so the 21.9MC marker and 177.25MC marker coincide at 100% response.

HIGH BAND RF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	21.9MC 26.4MC	Turn tuning gang fully open	Vert. Amp. to point (D). Low side to chassis.	A18, A19	Adjust A18 for maximum amplitude at the 21.9MC point on response curve. Adjust A19 for maximum amplitude at the 26.4MC point on response curve. See figure 6.
17.	"	"	177MC (10MC SWP)	21.9MC 26.4MC	Turn tuning gang fully closed.	"	L6, L8	Expand or compress turns of L6 for maximum amplitude at the 21.9MC point on the response curve. Adjust turns of L8 for maximum amplitude at the 26.4MC point on response curve.

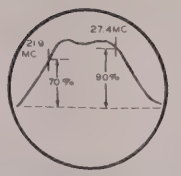


FIG 1

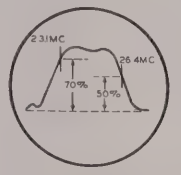


FIG 2

FIG. 3

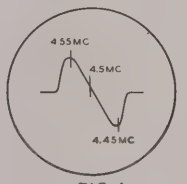


FIG.4

FIG.5

FIG.6

TV ALIGNMENT INSTRUCTIONS (CONT.)

LOW BAND OSCILLATOR ALIGNMENT

Turn the tuner switch to "LOW BAND" (clockwise.)
The sweep generator output lead should be termintaed with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	65MC (10MC SWP)	21.9MC 89.25MC	Turn tuning gang fully open.	Vert. Amp. to point (D). Low side to chassis.	L9	Expand or compress coil turns until the 21.9MC and 89.25MC markers coincide at 100% response as shown in figure 7.
19.	"	"	57MC (10MC SWP)	21.9MC 58.75MC	Tuning gang fully closed.	"		Check the coincidence of the 21.9MC and 58.75MC marker. If they are more than 1/2MC apart it will be necessary to effect a compromise between the high and low bands. There should be no more than 1/2 MC, difference between the markers on any channel.

LOW BAND RF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
20.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	21.9MC 26.4MC	Turn tuning gang fully open	Vert. Amp. to point (D). Low side to chassis.	L5, L7	Expand or compress turns of L5 for maximum amplitude at the 21.9MC point on curve. Adjust turns of L7 for maximum amplitude at the 26.4MC point on the response curve. Check all low band channels; if the markers fall below 70%, or the dip which may appear exceeds 30%, on any channel, compromise adjustment of L5 and L7 will be required for optimum response on all low band channels.

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set the pointer 1 inch to the right of the left hand end of the dial backplate.

AM ALIGNMENT

Turn the function selector switch to "AM" (third position clockwise).
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
21	.1MFD	High side to pin 2 (Grid) of 12AT7 (V29). Low side to chassis.	455KC (400∿ Mod.)	AM (third position clockwise).	Tuning gang fully closed	Across voice coil	A20, A21, A22, A23, A24	Adjust for maximum output.
22		Loop	1600KC	"	Set pointer 1 7/16 ins. to the left of the right hand end of the dial backplate.	"	A25	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
23		Loop	1400KC	"	Tune for max. output.	"	A26	"

FM IF ALIGNMENT

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
24	.1MFD	High side to pin 2 (Grid) of 12AT7 (V29). Low side to chassis.	10.7MC (Unmod.)	FM (fourth position clockwise).	Tuning gang fully closed	Use VTVM. DC probe to point (E). Common to chassis.	A27, A28, A29, A30	Adjust for maximum deflection.
25	"	"	10.7MC (450KC SWP)	"	"	Vert. Amp. to point (E). Low side to chassis.	A31, A32, A33	Adjust A31 and A32 so 10.7MC occurs at center of crossover lines as per figure 8. Adjust A33 for maximum amplitude and straightness of crossover lines. Repeat the adjustments for best results.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
26	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	108MC (Unmod.)	FM	Set pointer 1 7/16 ins. to the left of the right hand end of dial backplate.	DC Probe to point (E). Common to chassis.	A34	Adjust for maximum deflection. If two peaks are noted use the one with lowest capacity setting.
27	"	"	106MC	"	Tune for max. deflection.	"	A35	Adjust for maximum deflection.

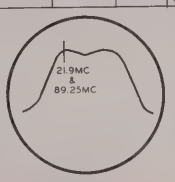


FIG.7

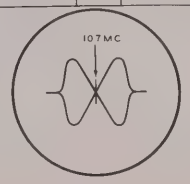


FIG. 8

SYLVANIA MODELS
1-076, 1-128 (Ch. 1-108)

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.2VDC	0V.	6.3VAC	0V.	115VDC	115VDC	0V.		
V 2	6AG5	0V.	1.2VDC	6.3VAC	0V.	145VDC	145VDC	1.2VDC		
V 3	6J6	145VDC	125VDC	0V.	6.3VAC	-1.6VDC	§-8VDC	0V.		
V 4	6BA6	0V.	0V.	0V.	6.3VAC	125VDC	125VDC	1.4VDC		
V 5	6BA6	0V.	0V.	0V.	6.3VAC	135VDC	135VDC	1.4VDC		
V 6	6AU6	22.5VDC	0V.	0V.	6.3VAC	182VDC	182VDC	25VDC		
V 7	6AG5	0V.	2.1VDC	0V.	6.3VAC	185VDC	185VDC	2.1VDC		
V 8	6AL5	▲12VDC	-.1VDC	6.3VAC	0V.	.2VDC	0V.	▲12VDC		
V 9	6AQ5	▲11VDC	▲20VDC	0V.	6.3VAC	▲115VDC	0V.	▲11VDC		
V 10	6AU6	-.1VDC	.6VDC	0V.	6.3VAC	90VDC	90VDC	.6VDC		
V 11	6AU6	-.2VDC	0V.	0V.	6.3VAC	14VDC	90VDC	.8VDC		
V 12	6AL5	.5VDC	0V.	0V.	6.3VAC	.2VDC	0V.	.2VDC		
V 13	6AU6	-.6VDC	0V.	0V.	6.3VAC	133VDC	33VDC	0V.		
V 14	6Y6G	0V.	0V.	155VDC	132VDC	0V.	0V.	6.3VAC	11VDC	
V 15	12AU7	▲130VDC	▲-12VDC ▲-36VDC	▲12.5VDC	6.3VAC	6.3VAC	▲130VDC	▲80VDC	▲90VDC	0V.
V 16	12AX7	▲380VDC	▲115VDC	▲115VDC	0V.	0V.	▲ 320VDC	▲115VDC	▲117VDC	6.3VAC
V 17	12AU7	▲32VDC	▲11VDC	▲12VDC	6.3VAC	6.3VAC	60VDC	1 VDC	0V.	0V.
V 18	6AQ5	▲1.1VDC ▲2VDC	▲42VDC ▲34VDC	0V.	6.3VAC	▲310VDC	▲310VDC	▲1.1VDC ▲2VDC		
V 19	6AL5	0V.	-3.1VDC	1 VAC	6.3VAC	0V.	0V.	-2.4VDC		
V 20	6AU6	-1.7VDC	0V.	0V.	6.3VAC	175VDC	175VDC	0V.		
V 21	12AU7	180VDC	-14.5VDC	.1VDC	0V.	0V.	160VDC	.6VDC	50VDC	6.3VAC
V 22	6BD5GT	-1.2VDC	0V.	▲12VDC	0V.	112VDC 180VDC	0V.	6.3VAC	280VDC	
V 23	6W4GT	0V.	0V.	180VDC 112VDC	190VDC	0V.	193VDC	■6.3VAC	■6.3VAC	
V 24	6Y6G	0V.	0V.	▲320VDC	▲220VDC	▲140VDC	▲140VDC	6.3VAC	▲160VDC	
V 25	1B3GT	* DO NOT MEASURE.								
V 26	5U4G	0V.	210VDC	0V.	220VAC	0V.	220VAC	0V.	210VDC	
V 27	7X6	6.3VAC	210VDC	200VAC	125VAC	125VAC	200VAC	210VDC	0V.	
V 28	12VP4	0V.	14.5VDC	PIN 11 5.6VDC	PIN 12 6.3VAC					

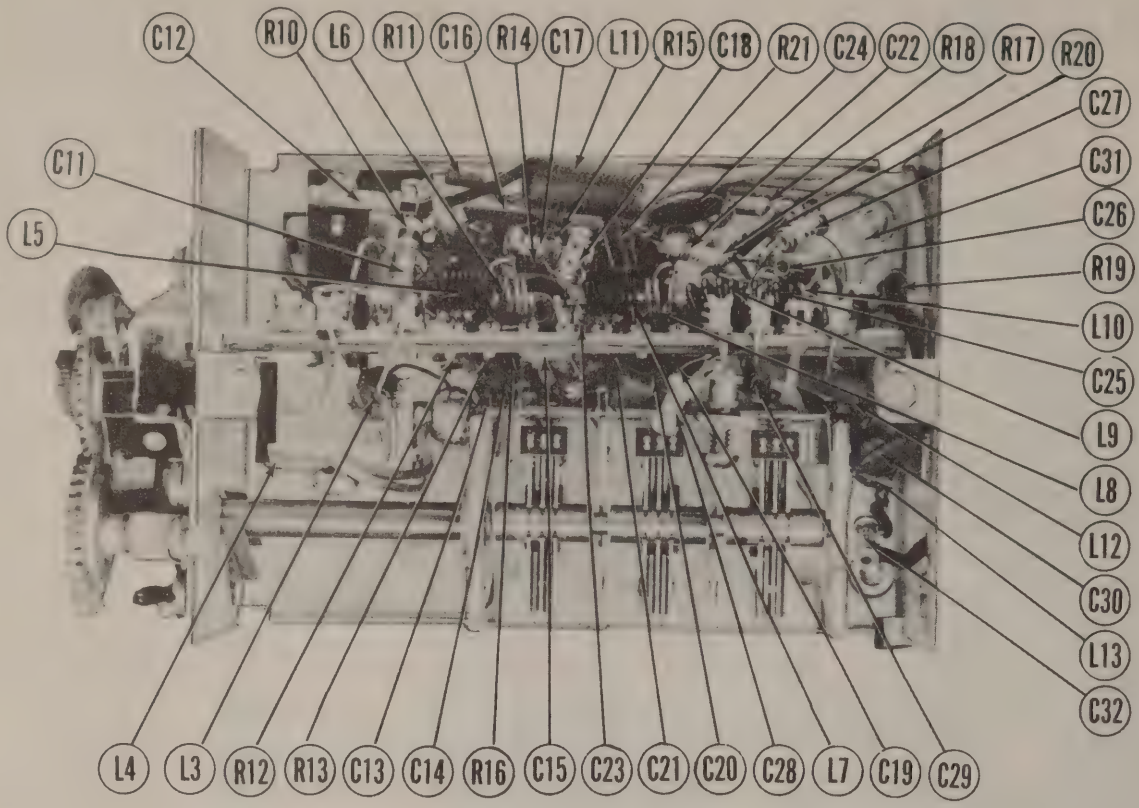
* DO NOT MEASURE:
▲ MEASURED FROM OUTPUT OF M1 and M2.
■ MEASURED ACROSS FILAMENTS.
§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

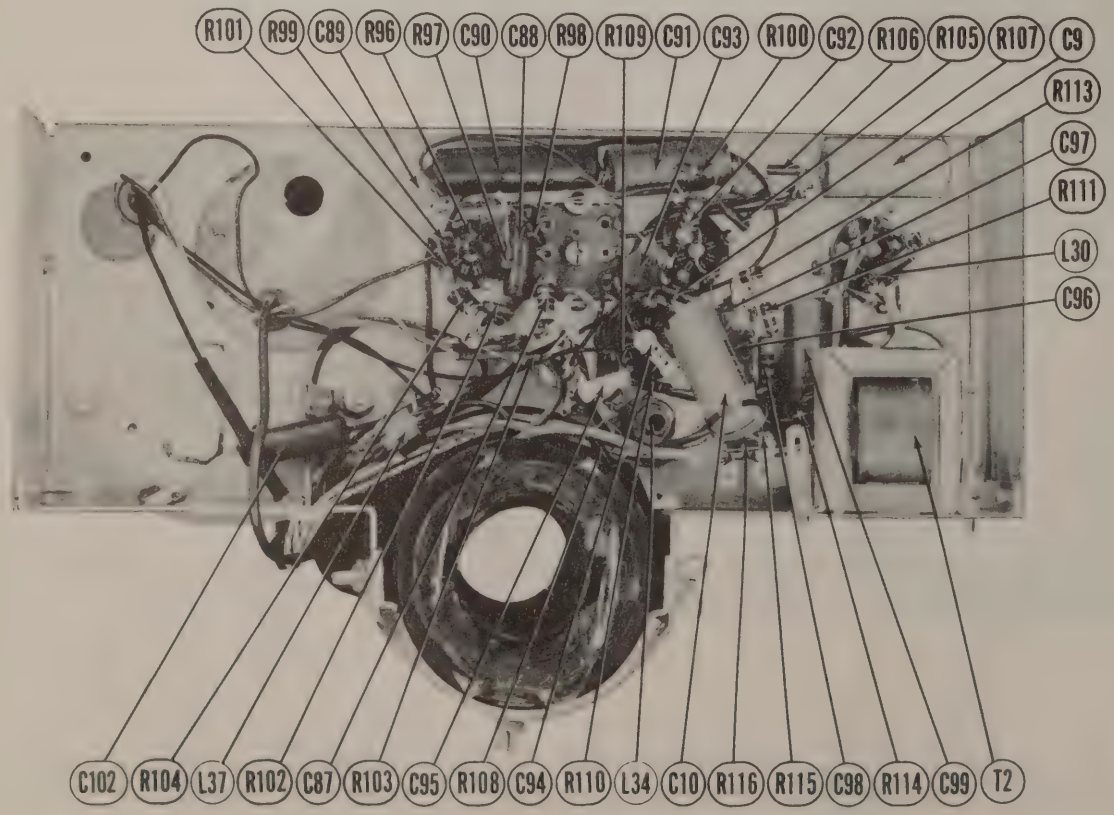
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	110KΩ	0Ω	.1Ω	0Ω	†2.2KΩ	†2.2KΩ	0Ω		
V 2	6AG5	10KΩ	0Ω	.1Ω	0Ω	†1.2KΩ	†1.2KΩ	0Ω		
V 3	6J6	†1000Ω	†11KΩ	0Ω	.1Ω	105KΩ	10KΩ	0Ω		
V 4	6BA6	12KΩ	0Ω	0Ω	.1Ω	†4KΩ	†4KΩ	82Ω		
V 5	6BA6	11KΩ	0Ω	0Ω	.1Ω	†4KΩ	†4KΩ	82Ω		
V 6	6AU6	4.7KΩ	0Ω	0Ω	.1Ω	†350Ω	†350Ω	3300Ω		
V 7	6AG5	15KΩ	150Ω	0Ω	.1Ω	†250Ω	†250Ω	150Ω		
V 8	6AL5	▲1.5KΩ	120KΩ	.1Ω	0Ω	68Ω	0Ω	▲5KΩ		
V 9	6AQ5	▲5KΩ	▲1.1KΩ	0Ω	.1Ω	†36KΩ	0Ω	▲5KΩ		
V 10	6AU6	47KΩ	68Ω	0Ω	.1Ω	†12KΩ	†12KΩ	68Ω		
V 11	6AU6	47KΩ	0Ω	0Ω	.1Ω	†68KΩ	†12KΩ	120Ω		
V 12	6AL5	68KΩ	4Ω	0Ω	.1Ω	Inf.	0Ω	Inf.		
V 13	6AU6	10 Meg.	0Ω	0Ω	.1Ω	†120KΩ	†1.5 Meg.	0Ω		
V 14	6Y6G	0Ω	0Ω	†700Ω	†5KΩ	470KΩ	Inf.	.1Ω	18ΩΩ	
V 15	12AU7	†350KΩ	▲1.2 Meg. ▲260KΩ	▲1.2KΩ	.1Ω	.1Ω	†25KΩ	▲1.5 Meg.	▲5KΩ	0Ω
V 16	12AX7	†220KΩ	72KΩ	▲560KΩ	0Ω	0Ω	†33KΩ	13.5KΩ	▲2.2 Meg.	.1Ω
V 17	12AU7	†270KΩ	4.7 Meg.	▲60Ω	.1Ω	.1Ω	†23KΩ	†1.6 Meg.	0Ω	0Ω
V 18	6AQ5	▲2.1 Meg. ▲1.1 Meg.	▲1.1KΩ ▲5KΩ	0Ω	.1Ω	†1.7KΩ	†1.7KΩ	▲2.1 Meg. ▲1.1 Meg.		
V 19	6AL5	0Ω	1.1 Meg.	2Ω	.1Ω	200KΩ	0Ω	1.1 Meg.		
V 20	6AU6	1.2 Meg.	0Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	0Ω		
V 21	12AU7	†200Ω	100KΩ	9Ω	0Ω	0Ω	†300KΩ †45KΩ	▲2.7 Meg.	▲56KΩ	.1Ω
V 22	6BD5GT	▲500KΩ	0Ω	▲60Ω	0Ω	†2000Ω †200Ω	Inf.	.1Ω	†2000Ω †30Ω	
V 23	6W4GT	0Ω	Inf.	†200Ω †2000Ω	†60Ω	0Ω	†65Ω	■.4Ω	■.4Ω	
V 24	■Y6G	Inf.	0Ω	†85Ω	†5600Ω	▲470KΩ	440KΩ	.1Ω	▲350Ω	
V 25	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #800Ω-3KΩ
V 26	5U4G	Inf.	32KΩ	Inf.	10.5Ω	Inf.	10.5Ω	Inf.	32KΩ	
V 27	7X6	.1Ω	32KΩ	200Ω	6.5Ω	6.8Ω	200Ω	32KΩ	0Ω	
V 28	12VP4	0Ω	1.1 Meg.	PIN 11 3.3KΩ	PIN 12 .1Ω					

† MEASURED FROM PIN 8 OF V26.
▲ MEASURED FROM OUTPUT OF M1 and M2.
■ MEASURED ACROSS FILAMENTS.
MEASURED FROM PIN 3 OF V23.

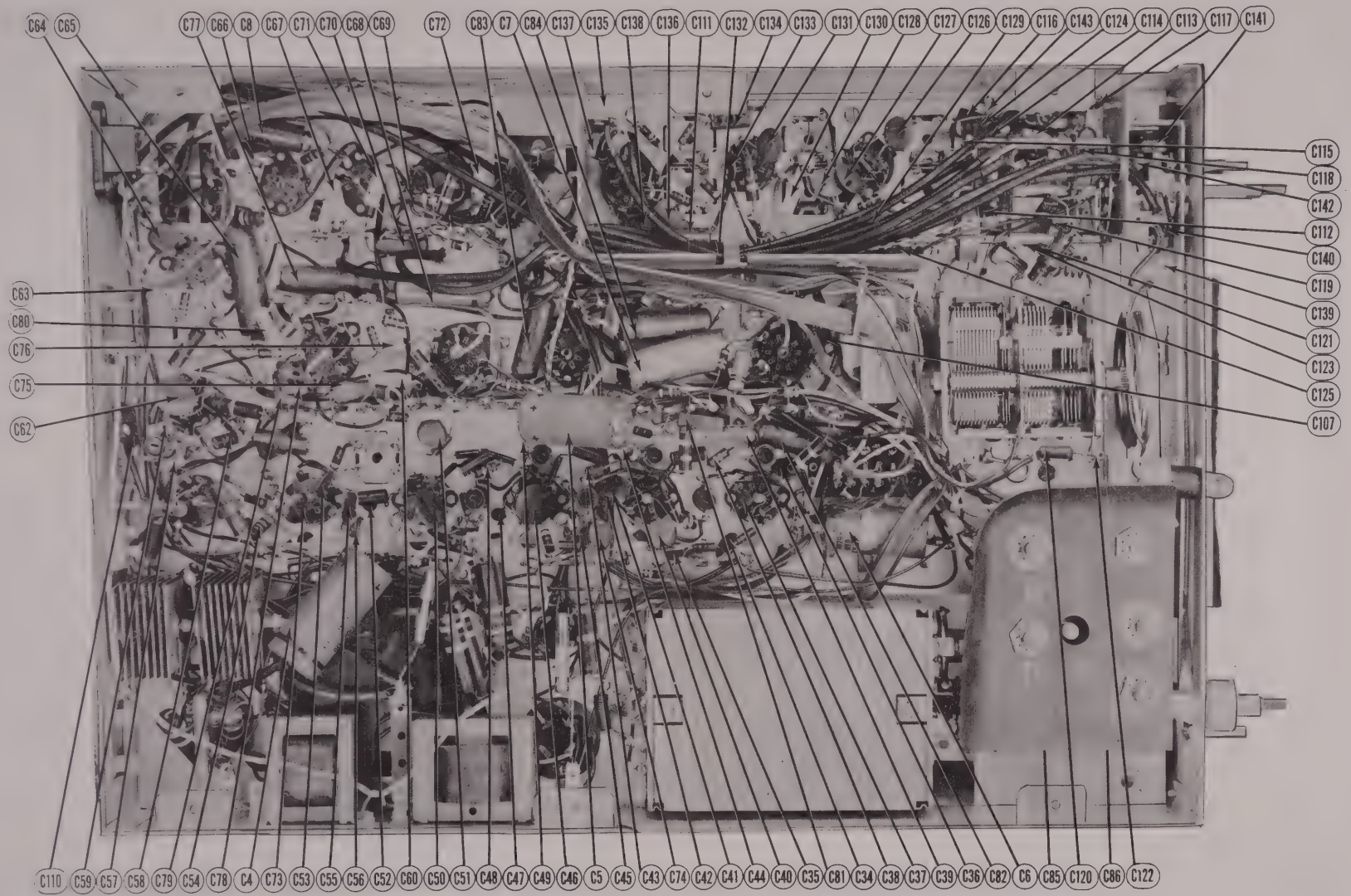
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



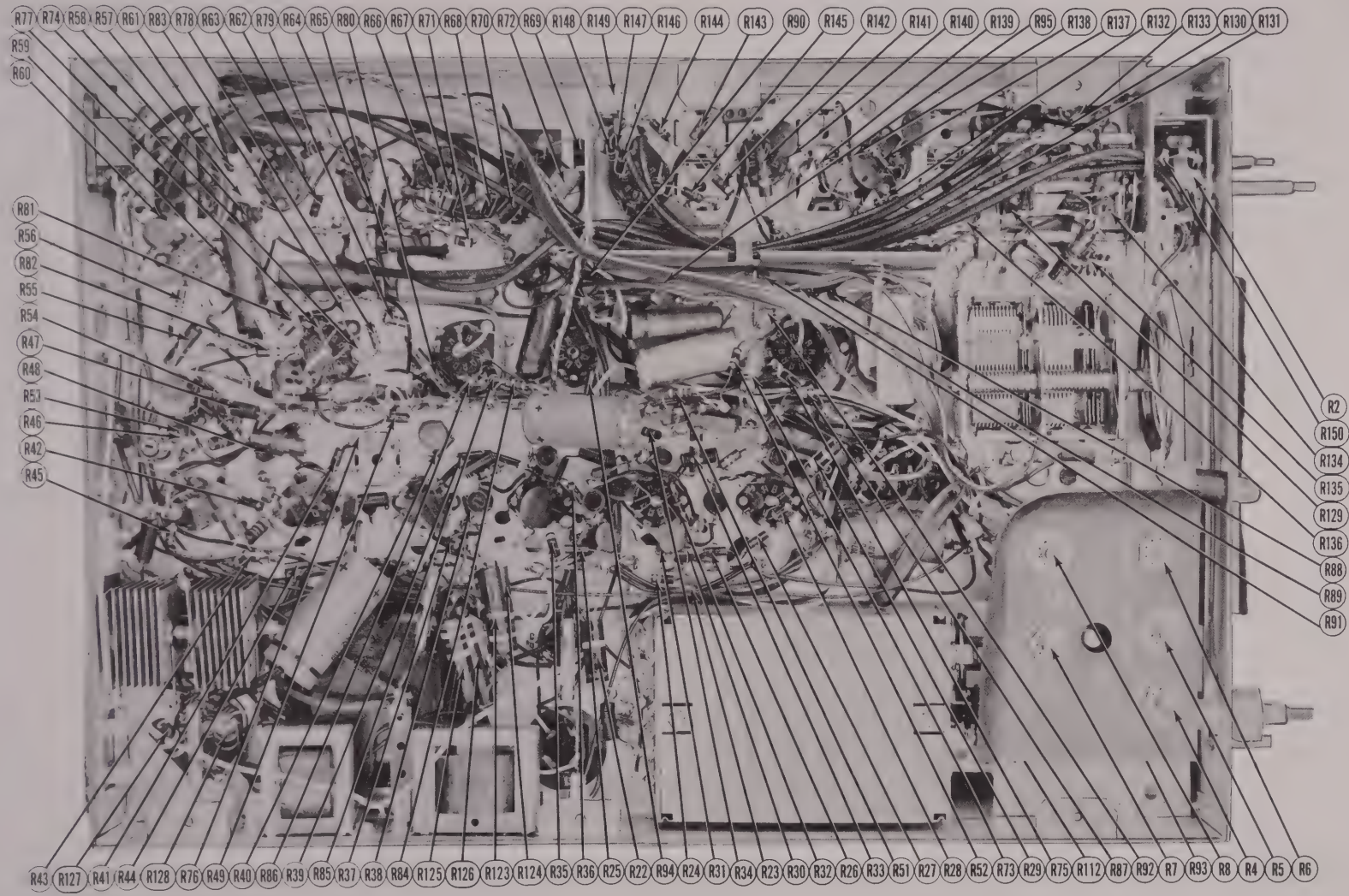
TV RF TUNER



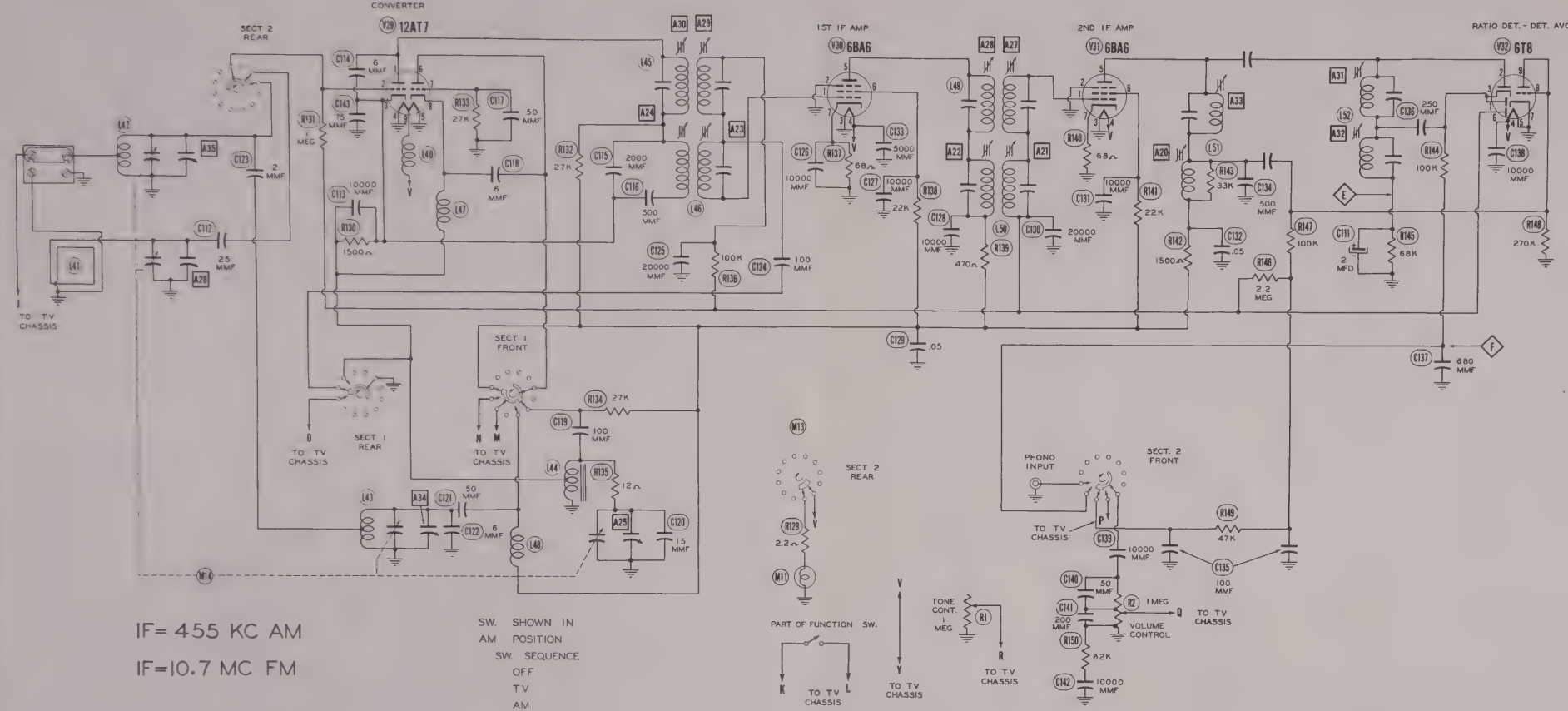
DEFLECTION-SUB-CHASSIS



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



IF= 455 KC AM

IF=10.7 MC FM

SW. SHOWN IN AM POSITION

SW. SEQUENCE
OFF
TV
AM
FM
PHONO

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V29	12AT7	190VDC	.1VDC	3.4VDC	0V.	0V.	152VDC	8-1.6VDC	0V.	6.3VAC
V30	6BA6	-.4VDC	0V.	0V.	6.3VAC	230VDC	125VDC	1.1VDC		
V31	6BA6	-.6VDC	0V.	0V.	6.3VAC	220VDC	125VDC	1.1VDC		
V32	6T8	-.5VDC	-1VDC	-.5VDC	6.3VAC	0V.	-.7VDC	0V.	-.8VDC	-.8VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.
ALL READINGS TAKEN IN "AM" POSITION.

RESISTANCE READINGS

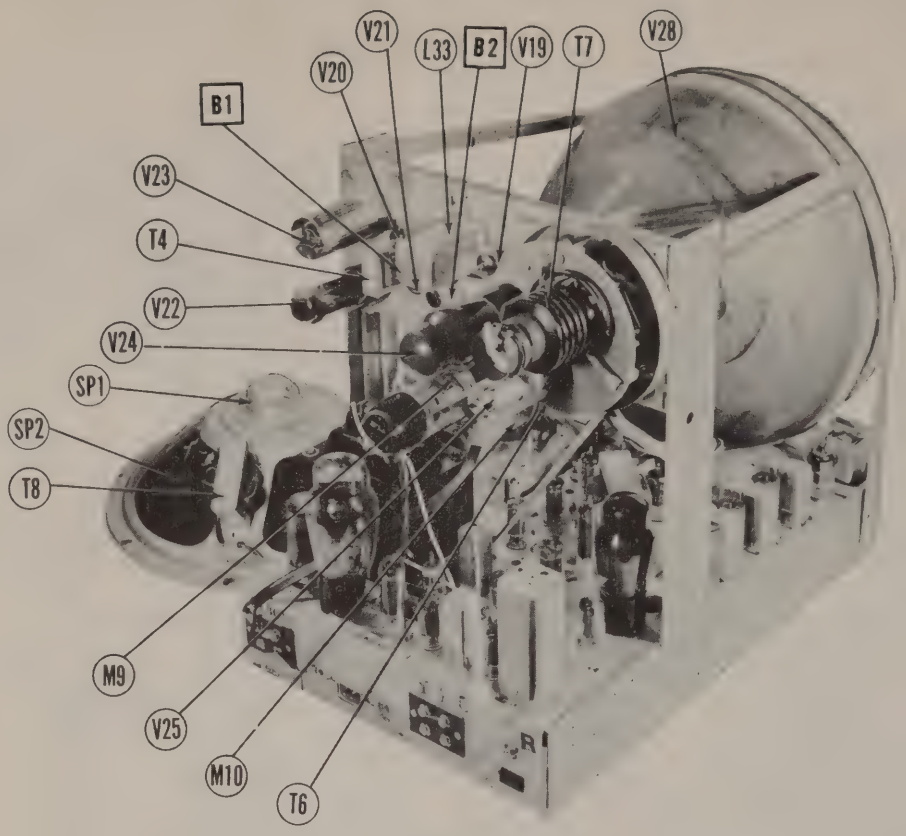
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V29	12AT7	†27KΩ	4 Meg.	1.5KΩ	0Ω	0Ω	†27KΩ	27KΩ	22Ω	.1Ω
V30	6BA6	3 Meg.	0Ω	0Ω	.1Ω	†500Ω	†25KΩ	68Ω		
V31	6BA6	3 Meg.	0Ω	0Ω	.1Ω	†1.6KΩ	†22KΩ	68Ω		
V32	6T8	Inf.	63KΩ	Inf.	1Ω	0Ω	3 Meg.	0Ω	270KΩ	270KΩ

† MEASURED FROM PIN 8 OF V26.

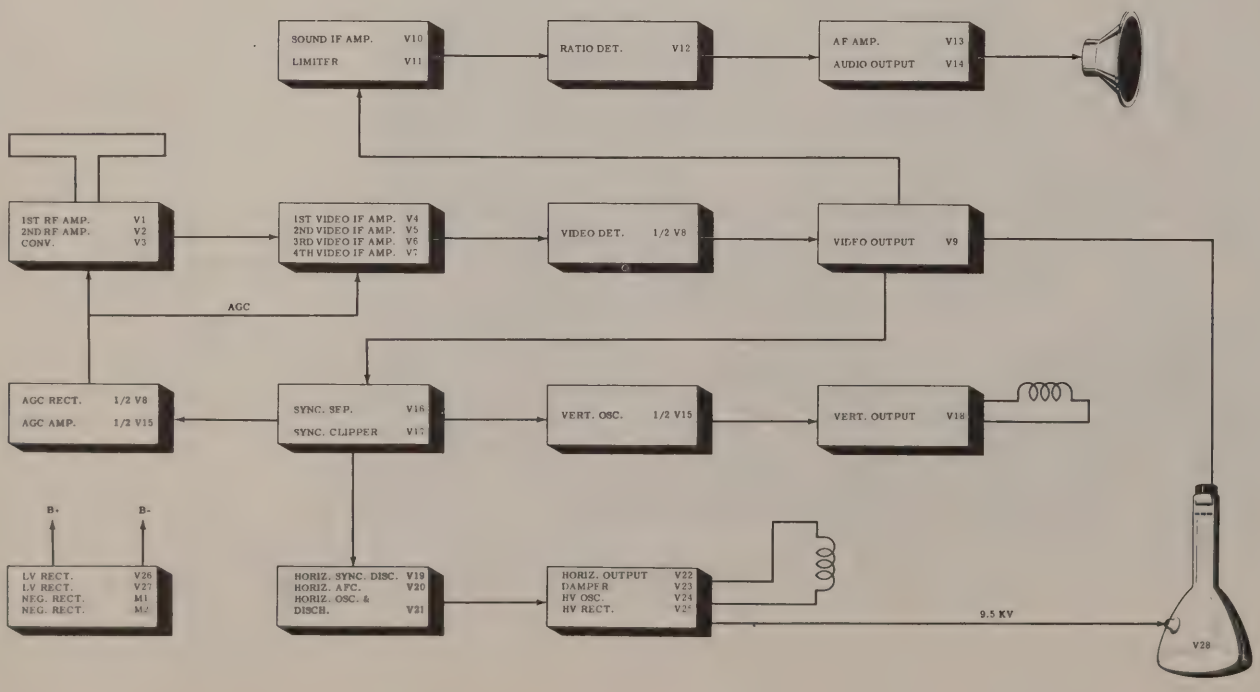
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1950

96-11

RADIO TUNER - SCHEMATIC



CHASSIS-TOP VIEW



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		SYLVANIA PART No.	STANDARD REPLACEMENT		
V1	1st RF Amp.	623-0001	6AG5	7BD	
V2	2nd RF Amp.	623-0001	6AG5	7BD	
V3	Converter	623-0002	6J6	7BF	
V4	1st Video IF	623-0004	6BA6	7BK	
V5	2nd Video IF	623-0004	6BA6	7BK	
V6	3rd Video IF	623-0005	6AU6	7BK	
V7	4th Video IF	623-0001	6AG5	7BD	
V8	Video Det. -AGC	623-0003	6AL5	6BT	
V9	Video Output	623-0007	6AQ5	7BZ	
V10	Sound IF Amp.	623-0005	6AU6	7BK	
V11	Limiter	623-0005	6AU6	7BK	
V12	Ratio Det.	623-0003	6AL5	6BT	
V13	AF Amp.	623-0005	6AU6	7BK	
V14	Audio Output	622-0006	6Y6G	7AC	
V15	AGC Amp. -Vert. Osc.	623-0006	12AU7	9A	
V16	Sync. Sep.	623-0008	12AX7	9A	
V17	Sync. Clipper	623-0006	12AU7	9A	
V18	Vert. Output	623-0007	6AQ5	7BZ	
V19	Hor. Disc.	623-0003	6AL5	6BT	
V20	Hor. Sync. -AFC	623-0005	6AU6	7BK	
V21	Hor. Osc. -Disch.	623-0006	12AU7	9A	
V22	Hor. Output	622-0007	6BD5GT	6CK	
V23	Damper	633-0004	6W4GT	4CG	
V24A	HV Osc.	622-0006	6Y6G	7AC	
B	HV Osc.	622-0005	6SN7GT	8BD	
V25	HV Rect.	633-0002	1B3GT	3C	
V26	LV Rect.	633-0003	5U4G	5T	
V27	LV Rect.	632-0003	7X6	7AJ	
V28A	Picture Tube	642-0002	12VP4	12G	Used in model 1-128
B	Picture Tube	642-0001	10MP4	12G	Used in model 1-076
V29	Converter	623-0009	12AT7	9A	
V30	1st IF Amp.	623-0004	6BA6	7BK	
V31	2nd IF Amp.	623-0004	6BA6	7BK	
V32	Ratio Det. -Det.-AVC	623-0010	6T8	9E	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	250	161-2001	AF83G4A ♦			TVL-204	■ Filter
B	25	25						▲ Output Cathode Bypass
C2A	80	250	161-4001	AF16128F4D			TVL-405	▲ Filter
B	60	250						■ Decoupling
C	40	250						▲ Filter
D	20	150						Output Screen Bypass
C3A	10	450	161-4000	AF2J2G12E20B			TVL-404	▲ Vert. Output Decoupling
B	10	300						■ Vert. Osc. Decoupling
C	60	200						▲ Filter
D	100	50						Vert. Output Cath. Bypass
C4	60	200	161-1003	PRS250/40			D-5873	Filter
C5	20	250	161-1005	PRS250/20			UT-202	Fuse Bypass *
C6	100	50	161-1002	PRS50/100			TVL-17	Hor. Cent. Cont. Bypass
C7	10	12	161-1004	E26A230			TVA-5	AGC Filter
C8	2	50	161-1001	PRS150/4			TVA-12	Stabilizing Cap.
C9	20	250	161-1005	PRS250/20			UT-202	Hor. AFC Decoupling
C10	10	25		PRS25/10			TVA-5	Bias Filter *
C11	50			GP50K	D6-500	GP1K-50		RF Coupling
C12	1500			GP1500M	D6-152	GP2L-0015		AGC Filter
C13	5000			BPD-5	D6-502	811-005	29C1	1st RF Decoupling
C14	5000			BPD-5	D6-502	811-005	29C1	1st RF Decoupling
C15	14			CN14JNPO		NPOK-14		Fixed Trimmer
C16	5000			BPD-5	D6-502	811-005	29C1	1st RF Filament Bypass
C17	100			GP100M	D6-101	GP1K-100		RF Coupling
C18	4.7			GP5K	D2-4.7	NPOK-4.7		RF Coupling
C19	5000			BPD-5	D6-502	811-005	29C1	2nd RF Decoupling
C20	5000			BPD-5	D6-502	811-005	29C1	2nd RF Decoupling
C21	14			CN14JNPO		NPOK-14		Fixed Trimmer
C22	100			GP100M	D6-101	GP1K-100		RF Coupling
C23	680			GP680M	D6-681	GP2K-680		2nd RF Cathode Bypass
C24	5000			BPD-5	D6-502	811-005	29C1	2nd RF Filament Bypass
C25	2.2				D2-2.2			Osc. Coupling
C26	30			GP30K	D2-30	GP1K-33		Osc. Grid Cap.
C27	17.5			CN17.5JNPO		NPOK-17.5		Fixed Trimmer
C28	10			GP10K	D2-10	NPOK-10		Fixed Trimmer
C29	19			CN19JNPO	D2-20	NPOK-20		Fixed Trimmer
C30	5000			BPD-5	D6-502	811-005	29C1	RF Bypass
C31	10			GP10K	D2-10	NPOK-10		Fixed Trimmer
C32	100			GP100M	D6-101	GP1K-100		IF Coupling
C33	5000		166-5000D	BPD-5	D6-502	811-005	29C1	RF Bypass *
C34	5000		166-5000D	BPD-5	D6-502	811-005	29C1	AGC Filter
C35	5000		166-5000D	BPD-5	D6-502	811-005	29C1	AGC Filter
C36	5000		166-5000D	BPD-5	D6-502	811-005	29C1	1st V. IF Decoupling
C37	1000		166-1000D	GP1000M	D6-102	811-001	29C4	1st V. IF Filament Bypass
C38	.68		168-0004P		D2-.68			IF Coupling
C39	10		166-0010P	CH10KNPO	D2-10	NPOK-10	MS-41	Fixed Trimmer
C40	5000		166-5000D	BPD-5	D6-502	811-005	29C1	AGC Filter
C41	5000		166-5000D	BPD-5	D6-502	811-005	29C1	2nd V. IF Decoupling
C42	1000		166-1000D	GP1000M	D6-102	811-001	29C4	2nd V. IF Fil. Bypass
C43	1.5		168-0001P		D2-1.5	NPOK-1.5		IF Coupling
C44	9		166-0010P	SI9DNPO	D2-10	NPOK-10	MS-41	Fixed Trimmer
C45	5000		166-5000D	BPD-5	D6-502	811-005	29C1	3rd V. IF Grid Decoupling
C46A	4000		168-0003D	BPD-5	D6-472	} 882-2 x 004	36C2	3rd V. IF Cath. Bypass
B	4000			BPD-5	D6-472			3rd V. IF Decoupling
C47	1000		166-1000D	GP1000M	D6-102	GP2L-001	29C4	3rd V. IF Fil. Bypass
C48	.68		168-0004P		D2-.68			IF Coupling
C49	5		166-0006P	CN5CNPO	D2-4.7	NPOK-5	MS-55	Fixed Trimmer

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP.	RATING VOLT	REPLACEMENT DATA SYLVANIA PART No	AEROVOX PART No	CENTRALAB PART No.	ERIE PART No	SPRAGUE PART No	IDENTIFICATION CODES AND INSTALLATION NOTES
C50A	4000		168-0003D	BPD-5	D6-472	882-2 x 004	36C2	4th V IF Cath. Bypass
B	4000			BPD-5	D6-472			4th V IF Decoupling
C51	5000		166-5000D	BPD-5	D6-502	811-005	29C1	RF Bypass *
C52	1000		166-1000D	GP1000M	D6-102	GP2L-001	29C4	4th V IF Filament Bypass
C53	5000		168-5000D	BPD-5	D6-502	811-005	29C1	V Det - AGC Fil. Bypass
C54	10		166-0010P	GP10K	D6-100	NP0K-10	MS-41	V Diode Filter
C55	5000		166-5000D	BPD-5	D6-502	811-005	29C1	RF Bypass
C56	5000		168-5000D	BPD-5	D6-502	811-005	29C1	RF Bypass
C57	5		168-0005P	CN5DNPO	D2-4.7	NP0K-5	MS-55	S IF Coupling
C58	10		168-0010P	CN10KNPO	D2-10	NP0K-10	MS-41	Fixed Trimmer
C59	56		168-0056N	CN56JNPO	D2-56	NP0M-50	MS-45	Fixed Trimmer
C60	10000		168-0002N	GP10000M	D6-103	811-01	TM-11	Pic. Tube Grid Bypass
C61	5000		166-5000D	BPD-5	D6-502	811-005	29C1	RF Bypass
C62A	4000		168-0003D	BPD-5	D6-472	882-2 x 004	36C2	1st S IF Cath. Bypass
B	4000			BPD-5	D6-472			1st S IF Decoupling
C63	50		166-0050N	GP50M	D6-500	GPK-50	1FM-45	2nd S IF Grid Filter
C64	5000		166-5000D	BPD-5	D6-502	811-005	29C1	2nd S IF Screen Bypass
C65	2	400	162-0402	P488-22			TC-2	2nd S IF Plate Dec
C66	680	500	163-0680	GP680K	D6-681	GP2K-680	1FM-37	De-emphasis
C67	10000		168-0002N	GP10000M	D6-103	811-01	TM-11	Audio Coupling
C68	1	200	162-0601	P288-1			TM-1	AF Amp. Screen Bypass
C69	100		166-0100P	GP100M	D6-101	GPK-100	1FM 31	AF Amp. Plate Bypass
C70	2000		166-2000P	GP2000M	D6-202	GP2M-002	TM-22	Tone Compensation
C71	10000		168-0002N	GP10000M	D6-103	811-01	TM-11	Audio Coupling
C72	10000		168-0002N	GP10000M	D6-103	811-01	TM-11	Output Plate Bypass
C73	5000		166-5000D	BPD-5	D6-502	811-005	29C1	AGC Filter *
C74	5000		166-5000D	BPD-5	D6-502	811-005	29C1	AGC Filter *
C75	003	600	162-0622	P688-003	D6-303	GP2M-003	TM-23	Hor. Sync. Sep. Cath. Bypass
C76	500		166-0500P	GP500M	D6-501	GP2K-500	1FM-35	Sync. Coupling
C77	.1	200	163-0601	P288-1			TM-1	Vert. Sync. Sep. Cath. Byp.
C78	220	500	163-0220	1468-0002	D6-221	GP2K-220	1FM-32	Vert. Sync. Sep. Plate Byp.
C79	220	500	163-0220	1468-0002	D6-221	GP2K-220	1FM-32	Vert. Sync. Sep. Plate Byp. *
C80	10000		168-0002N	GP10000M	D6-103	811-01	TM-11	Vert Sync. Coupling
C81	1000	500	163-1000	1467-001	D6-102	GP2L-001	1FM-21	Vert. Sync. Coupling
C82	.015	400	.62-04115	P488-015			MB-115	Integrator Net.
C83	05	200	162-0615	P288-05			TM-15	Vert. Osc. Cath. Bypass
C84	1	200	163-0601	P288-1			TM-1	Vert. Discharge
C85	02	400	163-0612	P488-02			TM-12	Vert. Discharge
C86	1	200	162-0601	P288-1			TM-1	Vert. Sweep Coupling
C87	100		166-0100P	GP100M	D6-101	GPK-100	1FM-31	Hor. Sync. Coupling
C88	.005	400	162-0625	P688-005	D6-502	811-005	TM-25	Fixed Trimmer
C89	10000		168-0002N	GP10000M	D6-103	811-01	TM-11	AFC Filter
C90	2	400	162-0402	P488-22			TC-2	AFC Filter
C91	.015	400	160-42115	P488-015			MB-115	AFC Plate Bypass
C92	100		166-0100P	GP100M	D6-101	GPK-100	1FM-31	Phase Shifter
C93	5000		166-5000D	BPD-5	D6-502	811-005	29C1	Hor. Osc. Grid Cap.
C94	10000		168-0002N	GP10000M	D6-103	811-01	TM-11	Hor. Sweep Coupling
C95	10000		168-0002N	GP10000M	D6-103	811-01	TM-11	Hor. Disch. Cath. Bypass
C96	5000		166-5000D	BPD-5	D6-502	811-005	29C1	Hor. Disch. Plate Dec.
C97	680	500	163-0680	GP680K	D6-681	GP2K-680	1FM-37	Hor. Disch.
C98	1000		166-1000P	GP1000M	D6-102	GP2L-001	1FM-21	Hor. Sweep Coupling
C99	1	600	162-0601	P688-1			TM-1	Hor. Sweep Coupling
C100	2	400	162-0402	P488-22			TC-2	RF Bypass *
C101	50	500	163-0050	1468-00005	D6-500	GPK-50	1FM-45	Damper Filter *
C102	05	200	162-0615	P288-05			TM-15	HV Osc. Decoupling
C103	5000		166-5000D	BPD-5	D6-502	811-005	29C1	HV Osc. Screen Bypass
C104	.05	400	162-0615	P488-05			TM-15	HV Osc. Cathode Bypass
C105	680	500	163-0680	GP680K	D6-681	GP2K-680	1FM-37	Fixed Trimmer †
C106	5000		166-5000D	BPD-5	D6-502	811-005	29C1	HV Osc. Grid Filter
C107	.022	400	160-42122	P488-022			TM-12	RF Bypass
C108	.0005	10000	160-14350				TVM-351	HV Filter
C109	250		166-0250P	GP250M	D6-251	GP2K-250	1FM-325	Vert. Osc. Grid Cap.
C110	200	500	163-0200	1468-0002	D6-201	GP2K-200	1FM-32	Ant. Coupling
C111	2	50	161-1001	PRS150/4			TVA-12	Stabilizing Cap.
C112	25	500	163-0025	1468-000025	D6-250	GPIK-25	MS-425	RF Coupling
C113	10000		‡	GP10000M	D6-103	811-01	TM-11	Conv. Cathode Bypass
C114	6		166-0006P	C16DNPO	D2-6.8	NPOK-6.8	MS-55	Fixed Trimmer
C115	2000		166-2000N	GP2000M	D6-202	GP2M-002	1FM-22	Fixed Trimmer
C116	500	500	163-0500	1469-0005	D6-501	GP2K-500	MS-35	Fixed Trimmer
C117	50		166-0050P	GP50K	D6-500	GPIK-50	1FM-45	Osc. Grid Cap.
C118	6		166-0006P	C16DNPO	D2-6.8	NPOK-6.8	MS-55	Osc. Feedback
C119	100	500	163-0100	1468-0001	D6-101	GPIK-100	1FM-31	Osc. Feedback
C120	15		166-0015P	C15JN750	DN-15	N750K-15		Fixed Trimmer
C121	50		166-0050P	CN50LN750	DN-51	N750L-47	1FM-45	Osc. Feedback
C122	6		166-0006P	CN6DN470		N470K-6	MS-55	Fixed Trimmer
C123	2		168-0006P	CI2CNPO	D2-2.2			Osc. Coupling
C124	100		166-0100P	GP100M	D6-101	GPIK-100	1FM-31	AVC Filter
C125	20000		168-0007N	P488-02			TM-12	AVC Filter
C126	10000		168-0002D	BPD-10	D6-103	811-01	36C1	1st IF Cathode Bypass
C127	10000		168-0002D	BPD-10	D6-103	811-01	36C1	1st IF Screen Bypass
C128	10000		168-0002D	BPD-10	D6-103	811-01	36C1	1st IF Plate Decoupling
C129	.05	400	162-0615	P488-05			TM-15	Decoupling
C130	20000		168-0007N	P488-02			TM-12	AVC Filter
C131	10000		168-0002D	BPD-10	D6-103	811-01	36C1	2nd IF Screen Bypass
C132	05	400	162-0615	P488-05			TM-15	2nd IF Plate Decoupling
C133	5000		166-5000D	BPD-5	D6-502	811-005	29C1	2nd IF Filament Bypass
C134	500	500	163-0500	1469-0005	D6-501	GP2K-500	MS-35	Fixed Trimmer
C135A	100		‡	GP100M	D6-101	GPK-100	1FM-31	Diode RF Filter
B	100			GP100M	D6-101	GPK-100	1FM-31	Diode RF Filter
C136	250	500	163-0250	1468-00025	D6-251	GP2K-250	1FM-325	Diode Load Cap.
C137	680	500	163-0680	GP680K	D6-681	GP2K-680	1FM-37	De-emphasis
C138	10000		168-0002D	BPD-10	D6-103	811-01	36C1	Det.-AVC Filament Bypass
C139	10000		168-0002N	GP10000M	D6-103	811-01	TM-11	Audio Coupling
C140	50	500	163-0050	1468-00005	D6-500	GPK-50	1FM-45	Tone Compensation
C141	200	500	163-0200	1468-0002	D6-201	GP2K-200	1FM-32	Tone Compensation
C142	10000		◊	GP10000M	D6-103	811-01	TM-11	Tone Compensation
C143	75		168-0075N	GP75M	D6-750	GPIK-75	1FM-475	Conv. Cath. Bypass

‡ Items C113 and R130 are combined into one unit obtainable under MFGR'S Part No. 190-0004.
§ Items C135A, C135B and R149 are combined into one unit obtainable under MFGR'S Part No. 190-0003.
◊ Items C142 and R150 are combined into one unit obtainable under MFGR'S Part No. 190-0002.
* Not used in all models.
† Some models use 1500MMF in this application. MFGR'S Part No. 163-1500.
• Omit 15MFD section.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	1 Meg.	1/2	153-0004				Tone control
R2	1 Meg.	1/2	153-0003				Volume control, tapped @ 250KΩ & 500KΩ
R3A	1000Ω	2	153-0003				Contrast control-Wire Wound
B	100KΩ	1/2					Brightness control
R4	1 Meg.	1/2	153-0001	QII-137	15/16-61-S	B-69	Vert. hold control
R5	1 Meg.	1/2	153-0001	QII-137	15/16-61-S	B-69	Vert. size control
R6	5000Ω	2	153-3000	W-5000	43-5000	V-135	Vert. linearity control-Wire Wound
R7A	500KΩ	1/2	153-002	QII-133	M-58-S	AN-59	Horiz. linearity control
B	Shaft		Not Req.	Not Req.	Not Req.	AK-1	Attach to R7A per instructions
R8	140Ω	2	153-3002		43-140 CT		Horiz. centering control-Wire Wound-tapped @ 70Ω
R9	2000Ω	4	153-3001		58-2000	V-131	Horiz. size control-Wire Wound

RESISTORS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R10	560Ω	1/2		BTS-560	1st RF Grid
R11	150Ω	1/2			AGC Network
R12	1200Ω	1/2		BTS-1200	1st RF Plate Coil Shunt
R13	10000Ω 20%	1/2		BTS-1000	1st RF Decoupling
R14	10KΩ 20%	1/2			2nd RF Grid
R15	100Ω 20%	1/2			2nd RF Cathode
R16	1500Ω	1/2		BTS-1500	2nd RF Plate Coil Shunt
R17	5600Ω	1/2			Conv. Grid
R18	100KΩ 20%	1/2			Conv. Grid
R19	10KΩ	1/2			Conv. Plate
R20	10KΩ	1/2			Osc. Grid
R21	2200Ω 20%	1/2			Decoupling
R22	1000Ω	2	183-0102	BT-2-1000	Decoupling
R23	6.8 Meg.	1/2	181-0685	BTS-6.8 Meg.	Voltage Divider
R24	100KΩ	1/2	181-0104	BTS-100K	AGC Network
R25	1000Ω 20%	1/2	181-0102	BTS-1000	AGC Network
R26	1000Ω 20%	1/2	181-0102	BTS-1000	AGC Network
R27	1500Ω	1/2	181-0152	BTS-1500	1st Video IF Grid
R28	82Ω	1/2	181-0820		1st Video IF Cathode
R29	3900Ω	1	182-0392	BTA-3900	1st Video IF Decoupling
R30	1000Ω 20%	1/2	181-0102	BTS-1000	AGC Network
R31	2700Ω	1/2	181-0272	BTS-2700	2nd Video IF Transformer Shunt
R32	82Ω	1/2	181-0820		2nd Video IF Cathode
R33	3900Ω	1/2	182-0392	BTA-3900	2nd Video IF Decoupling
R34	47KΩ	1/2	181-0473		IF Trap Coil Shunt-See Note 1
R35	15KΩ	1/2	181-0153		3rd Video IF Transformer Shunt
R36	3300Ω	1/2	181-0332	BTS-3300	3rd Video IF Cathode-See Note 2
R37	15KΩ	1/2	181-0153		4th Video IF Transformer Shunt
R38	150Ω	1/2	181-0151		4th Video IF Cathode
R39	100Ω 20%	1/2	181-0101		Decoupling
R40	100Ω 20%	1/2	181-0101		Decoupling
R41	5600Ω	1/2	181-0562		5th Video IF Transformer Shunt
R42	22KΩ 5%	1/2	181-02235	BTS-22K-5%	Peaking Coil Shunt
R43	3900Ω 5%	1/2	181-0392	BTS-3900-5%	Video Det. Diode Load
R44	100Ω 20%	1/2	181-0101		Bias Network
R45	68Ω	1/2	181-0680		Video Amp. Cathode
R46	6800Ω	1/2	181-0682	BTS-6800	Trap Coil Shunt
R47	100KΩ	1	182-0104	BTA-100K	Video Amp. Plate
R48	3300Ω	2	183-0332	BT-2-3300	Picture Tube Cathode
R49	1 Meg. 20%	1/2	181-0105	BTS-1 Meg.	Voltage Divider
R50	27KΩ	1/2	181-0273	BTS-27K	Voltage Divider-See Note 3
R51	68Ω	1/2	181-0680		AGC Rect. Cathode
R52	4700Ω 5%	1/2	181-0472	BTS-4700-5%	Voltage Divider
R53	47KΩ 20%	1/2	181-0473		Sound IF Grid
R54	68Ω 20%	1/2	181-0680		Sound IF Cathode
R55	10KΩ 20%	1	182-0103		Sound IF Decoupling
R56	47KΩ 20%	1/2	181-0473		Limiter Grid
R57	68KΩ	1/2	181-0683		Limiter Plate Decoupling
R58	15KΩ	1/2	182-0153		Limiter Screen
R59	1200 5%	1/2	181-0121		Limiter Cathode
R60	33KΩ 20%	1/2	181-0333	BTS-33K	Voltage Divider
R61	100KΩ 20%	1/2	181-0104	BTS-100K	De-emphasis
R62	68KΩ 20%	1/2	181-0683	BTS-68K	Disc. Diode Load
R63	10 Meg. 20%	1/2	181-0106	BTS-10 Meg.	AF Amp. Grid
R64	1.5 Meg. 20%	1/2	181-0155	BTS-1.5 Meg.	AF Amp. Screen
R65	100KΩ 20%	1/2	181-0104	BTS-100K	AF Amp. Plate
R66	470KΩ 20%	1/2	181-0474	BTS-470K	Output Grid
R67	180Ω	1	182-0181	BW-1-180	Output Cathode
R68	68Ω	1/2	181-0680		Parasitic Supp.
R69	5600Ω	2	183-0562	BT-2-5600	Output Plate
R70	22KΩ	1	182-223	BTA-22K	Voltage Divider
R71	4700Ω	1/2	181-0472	BTS-4700	Voltage Divider
R72	400Ω	5	187-0001	AB-400	Filter-Wire Wound
R73	8200Ω 5%	1	181-0822	BTA-8200-5%	AGC Amp. Cathode
R74	1.5 Meg. 5%	1/2	181-0155	BTS-1.5 Meg. 5%	Bias Network
R75	10KΩ 20%	1/2	181-0103	BTS-10K	AGC Network
R76	680KΩ 20%	1/2	181-0684	BTS-680K	Bias Network
R77	10KΩ 20%	1/2	181-0103	BTS-10K	Sync. Sep. Grid
R78	33KΩ	1/2	181-0333	BTS-33K	Sync. Sep. Plate-See Note 4
R79	1.5 Meg.	1/2	181-0155	BTS-1.5 Meg.	Sync. Clipper Grid
R80	22KΩ	1	182-0223	BTA-22K	Sync. Clipper Plate
R81	68KΩ	1/2	181-0683	BTS-68K	Sync. Sep. Grid-See Note 5
R82	220KΩ	1/2	181-0224	BTS-220K	Sync. Sep. Plate-See Note 6
R83	560KΩ	1/2	181-0564	BTS-560K	Bias Network-See Note 7
R84	3.9 Meg.	1/2	181-0395	BTS-3.9 Meg.	Sync. Clipper Grid
R85	820KΩ	1/2	181-0824	BTS-820K	Sync. Clipper Grid
R86	270KΩ	1/2	181-0274	BTS-270K	Sync. Clipper Plate
R87	270KΩ	1/2	181-0274	BTS-270K	Vert. Osc. Grid
R88	22KΩ 20%	1/2	181-0223	BTS-22K	Vert. Osc. Transformer Shunt
R89	220KΩ 20%	1/2	181-0224	BTS-220K	Vert. Osc. Plate
R90	1200Ω	1/2	181-0122	BTS-1200	Vert. Osc. Cathode
R91	100KΩ	1/2	181-0104	BTS-100K	Voltage Divider
R92	4700Ω 5%	1/2	181-0472	BTS-4700-5%	Vert. Peaking-See Note 8
R93	1 Meg. 20%	1/2	181-0105	BTS-1 Meg.	Vert. Amp. Grid
R94	1000Ω 20%	1/2	181-0102	BTS-1000	Vert. Amp. Cathode
R95	1000Ω 20%	1/2	181-0102	BTS-1000	Vert. Amp. Decoupling
R96	100KΩ 20%	1/2	181-0104	BTS-100K	Horiz. Disc. Load
R97	100KΩ 20%	1/2	181-0104	BTS-100K	Horiz. Disc. Load
R98	1 Meg. 20%	1/2	181-0105	BTS-1 Meg.	Horiz. Disc. Load

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No.	IRC PART No.	IDENTIFICATION CODES
R99	1 Meg. 5%	1/2	181-01055	BTS-1 Meg. 5%	Horiz. AFC Fliter Network
R100	8200Ω	1/2	181-0822	BTS-8200	Horiz. AFC Filter Network
R101	10 Meg. 5%	1/2	181-0106	BTS-10 Meg. 5%	Voltage Divider
R102	33KΩ 5%	1/2	181-0333	BTS-33K-5%	Voltage Divider
R103	100KΩ 5%	1/2	181-0104	BTS-100K-5%	Voltage Divider
R104	4.3Ω	1/2	189-0007		Horiz. Disc. Filament-Wire Wound
R105	1000Ω 20%	1/2	181-0102	BTS-1000	Horiz. AFC Grid
R106	2200Ω 20%	1/2	181-0222	BTS-2200	Horiz. AFC Decoupling
R107	100KΩ 20%	1/2	181-0104	BTS-100K	Horiz. Osc. Grid
R108	22KΩ 20%	1/2	181-0223	BTS-22K	Horiz. Ringing Coil Shunt
R109	2.2 Meg.	1/2	181-0225	BTS-2.2 Meg.	Horiz. Discharge Grid
R110	56KΩ	1/2	181-0563	BTS-56K	Horiz. Discharge Cathode
R111	39KΩ	1/2	181-0393	BTS-39K	Horiz. Discharge Plate
R112	390KΩ	1/2	181-0394	BTS-390K	Horiz. Linearity Control Shunt
R113	4700Ω	1/2	181-0472	BTS-4700	Horiz. Peaking
R114	82Ω	1/2	181-0820		Parasitic Supp.
R115	470KΩ 20%	1/2	181-0474	BTS-470K	Horiz. Output Grid
R116	10KΩ 20%	1/2	181-0103	BTS-10K	Bias Network
R117	470KΩ 20%	1/2	181-0474	BTS-470K	HV Osc. Grid-See Note 8
R118	100Ω 20%	1/2	181-0101		Parasitic Supp.
R119	5600Ω 20%	2	183-0562	BT-2-5600	HV Osc. Screen-See Note 9
R120	2200Ω 20%	2	183-0221	BW-2-220	HV Osc. Screen-See Note 9
R121	3.6Ω	1/2			HV Rect. Filament-Wire Wound
R122	470KΩ 20%	1/2	181-0474		HV Filter
R123	390Ω	2	183-0391		Current Limiting
R124	390Ω	2	183-0391		Current Limiting
R125	390Ω	2	183-0391		Current Limiting
R126	390Ω	2	183-0391		Current Limiting
R127	39Ω	2	183-0390		Surge Limiter
R128	39Ω	2	183-0390		Surge Limiter
R129	2.5Ω		189-0008	BW-1/2-2.2	Series Dial Lamp-Wire Wound
R130	1500Ω			BTS-1500	Conv. Cathode-See Note 10
R131	1 Meg.		189-0105	BTS-1 Meg.	Conv. Grid
R132	27KΩ		189-0273	BTS-27K	Conv. Plate Decoupling
R133	27KΩ		189-0273	BTS-27K	Osc. Grid
R134	27KΩ		189-0273	BTS-27K	Osc. Plate
R135	12Ω		189-0120		Parasitic Supp.
R136	100KΩ		189-0104	BTS-100K	AVC Network
R137	68Ω		189-0680		1st IF Cathode
R138	22KΩ	1	182-0223	BTA-22K	1st IF Screen
R139	470Ω	1/2	181-0471	BTS-470	1st IF Plate Decoupling
R140	68Ω	1/2	181-0680		2nd IF Cathode
R141	22KΩ	1	182-0223	BTA-22K	2nd IF Screen
R142	1500Ω	1/2	181-0152	BTS-1500	2nd IF Plate Decoupling
R143	33KΩ	1/2	181-0333	BTS-33K	3rd IF Transformer Shunt
R144	100KΩ	1/2	181-0104	BTS-100K	De-emphasis
R145	68KΩ	1/2	181-0683	BTS-68K	Ratio Det. Diode Load
R146	2.2 Meg.	1/2	181-0225	BTS-2.2 Meg.	AVC Network
R147	100KΩ	1/2	181-0104	BTS-100K	AVC Network
R148	270KΩ	1/2	181-0274	BTS-270K	Diode Load
R149	47KΩ	1/2		BTS-47K	Diode Filter-See Note 11
R150	82KΩ	1/2		BTS-82K	Tone Compensation-See Note 12

Note 1. Some models use 39KΩ resistor in this application.
Note 2. Some models use 2200Ω resistor in this application.
Note 3. Some models use 33KΩ resistor in this application.
Note 4. Some models use 18KΩ resistor in this application.
Note 5. Some models use 10KΩ resistor in this application.
Note 6. Some models use 820KΩ resistor in this application.
Note 7. Some models use 1 Meg. resistor in this application.
Note 8. Some models use 3900Ω resistor in this application.
Note 9. Not used in all models.
Note 10. Items C113 and R130 are combined into one unit obtainable under MFGR'S Part No. 190-0004.
Note 11. Items C135A, C135B and R149 are combined into one unit obtainable under MFGR'S Part No. 190-0003.
Note 12. Items C142 and R150 are combined into one unit obtainable under MFGR'S Part No. 190-0002.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.63A	440VCT .330ADC 260VCT .200ADC	5VAC @ 3A	6.3VAC @ 13.4A	141-0008			

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T2	6.3VAC @ 1.66A	6.3VAC @ 1.2A			240-0001		P-2945 ①	

① Use two of this part number.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T3	170Ω	575Ω	242-0001	A-8111	A-3000	TBO-1 ②	Vert. Block Osc. Trans.
T4	160Ω 120Ω		241-0002				Horiz. Output Choke
T5	620Ω Tap @ 6.1Ω		241-0001	A-8112	A-3037	TSO-5	Vert. Output Trans.
T6A	36Ω		100-0001				Horiz. Deflection Coil
B	60Ω						Vert. Deflection Coil
T7	1.5Ω	570Ω	113-0010				
	SEC. 2	SEC. 3					
	15Ω	0Ω					

② Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SYLVANIA	STANCOR	MERIT	CHICAGO	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T8	2.3KΩ	3.4Ω	200Ω	.5Ω	143-0010	A-3876 ②	A-3018	RO-2	② Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SYLVANIA PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3.4Ω	539-1200	ST-101 MOD. P12-T	12A31A ③	Used in model 1-128
B	PM	3.4Ω	539-1000		10A4A ③	Used in model 1-076
	CONE DIA.	V. C. DIA.				
SP2A	11 7/16"	1"				
B	9 1/2"	1"				

③ Remount output transformer.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.330A	22.5Ω	.6 Henry	145-0001	C-2226 *		TR-3300 *	* Drill one new mounting hole.
L2	.200A	60Ω	1.1 Henry	145-0002		C-2974 ¶		¶ Drill new mounting holes.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SYLVANIA PART No.	MEISSNER PART No.	
L3	Ant. Coil	0Ω				Low-Band
L4	Ant. Coil	0Ω				High-Band
L5	RF Coil	0Ω				Low-Band
L6	RF Coil	0Ω				High-Band
L7	RF Coil	0Ω				Low-Band
L8	RF Coil	0Ω				High-Band
L9	Osc. Coil	0Ω				Low-Band
L10	Osc. Coil	0Ω				High-Band
L11	Fil. Choke	0Ω				
L12	RF Choke	0Ω				
L13	1st Video IF	.5Ω				
L14	Fil. Choke	0Ω		147-0014		
L15	Adj. Channel Video Trap.	.3Ω		118-0003		
L16	2nd Video IF	.9Ω	.9Ω	125-0001		
L17	Fil. Choke	0Ω		147-0014		
L18	4.5MC Sound Trap	.3Ω		118-0003		
L19	3rd Video IF	.9Ω	.9Ω	125-0001		
L20	Fil. Choke	0Ω		147-0014		
L21	4.5MC Sound Trap	.3Ω		118-0003		
L22	4th Video IF	.9Ω	.9Ω	125-0001		
L23	Fil. Choke	0Ω		147-0014		
L24	5th Video IF	.6Ω	1.2Ω	120-0002		
L25	Fil. Choke	0Ω		147-0014		
L26	Peaking	6Ω		146-0001		
L27	Peaking	8.5Ω		146-0002		
L28	Sound Take Off .	6.5Ω		129-0001		
L29	4.5MC Sound Trap	2Ω				Same coil form with L28
L30	Peaking	8.1Ω		146-0004		
L31	Sound IF	3Ω	3Ω	120-0001		
L32	Disc. Trans.	2.5Ω	4Ω	128-0002		
L33	Horiz. Sync. Disc. Trans.	80Ω	39.9Ω	128-0001		
L34	Ringing Coil	36Ω		146-0005		
L35	RF Choke	0Ω		147-0014		
L36	HV Osc. Cath. Choke	53Ω		146-0006		
L37	RF Choke	53Ω		146-0006		
L38	AC Line Chk.	0Ω		146-0007		
L39	AC Line Chk.	0Ω		146-0007		
L40	Fil. Choke	0Ω		146-0007		
L41	Loop Ant.	.5Ω	2.5Ω			
L42	FM Ant.	0Ω		111-0006		
L43	FM Osc.	0Ω		113-0012		
L44	AM Osc.	2.5Ω		113-0011	14-1073	
L45	1st FM IF	1.2Ω	1.2Ω	121-0011		
L46	1st AM IF	8Ω	18Ω	12-0010	16-6678	
L47	Osc. Cath. Choke	.2Ω		146-0009		
L48	Osc. Plate Choke	1.5Ω		146-0008		
L49	2nd FM IF	1.2Ω	.5Ω	122-0011		
L40	2nd AM IF	12.8Ω	12.8Ω	122-0010	16-6678	
L51	Disc. Primary -3rd AM IF	1.8Ω	9Ω	119-0001		
L52	Disc.	1.5Ω	1.5Ω	128-0003		

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

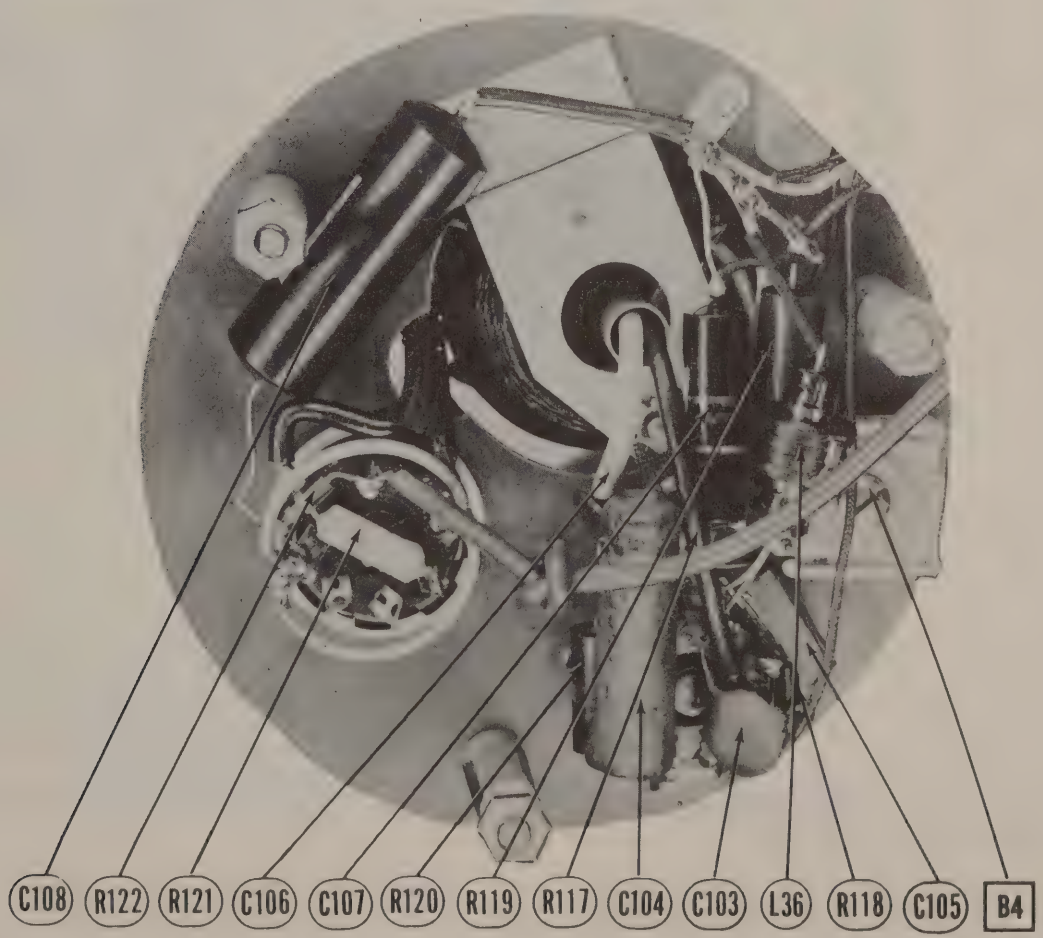
ITEM No.	RATING CURRENT	REPLACEMENT DATA SYLVANIA PART No.	SYLVANIA PART No.		NOTES
M1	.075A	517-0001	ND-5		
M2	.075A	517-0001	ND-5		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA SYLVANIA PART No.		NOTES
M11	Bayonet	6-8	.15	Brown	611-0047		Type #47
M12	Bayonet	115-125			611-0007		10 watt (compartment light)

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M3	RF Tuner	323-0001	
M4	Fuse		20A
M4	Fuse		Type 3AG .25A
M6	Fuse		Type GJV .25A 250V
M7	Fuse	191-0005	Type AGC .25A 250V
M8	Fuse		Type MDL 3-2/10A
M9	Ion Trap	400-0002	
M10	Focus Magnet Assembly	400-0001	
M13	Function SW		
M14	Tuning Cap		
M15	Phono Cartridge		
	Knob	740-0001	Control, Inner shaft
	Knob	740-0001	Control, Inner shaft
	Knob	740-0001	Control, Inner shaft
	Knob	744-0005	Control, Outer shaft
	Knob	744-0005	Control, Outer shaft
	Knob	740-0002	Function
	Knob	743-0001	Channel assembly



HIGH VOLTAGE SUPPLY-BOTTOM VIEW

HORIZONTAL LINEARITY ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Turn the horizontal size control until the picture is of proper width.
Turn the horizontal linearity control fully counter-clockwise, and then slowly clockwise until crowding is observed in the center of the picture. Then carefully turn the control counter-clockwise just enough to remove the crowding. On some sets the crowding may not be observed, in this case turn the control to maximum clockwise and leave it there. Caution: Do not operate the set for any length of time with this control incorrectly adjusted. Check the setting of the horizontal linearity control frequently during horizontal oscillator alignment.

HORIZONTAL OSCILLATOR ALIGNMENT

HORIZONTAL OSCILLATOR CHECK

a) Turn the set on and tune in a TV signal, preferably a test pattern. The picture should pull into sync.
b) Momentarily remove the signal by tuning to another channel and back again, the picture should fall back into sync.
c) Turn the set off for about 5 minutes, upon turning the set back on the picture should immediately fall back into sync.

SLIGHT RETOUCH ADJUSTMENT

If the oscillator failed any of the above check, it may be possible to correct it with a slight retouch adjustment as follows:
1) Remove the horizontal discriminator tube (V19) from its socket.
2) Adjust the horizontal frequency slug (B1) until the picture moves slowly back and forth across the screen with the blanking bar vertical.
3) Replace the horizontal discriminator tube (V19) in its socket.
4) Repeat the horizontal oscillator check; if the oscillator does not synchronize properly proceed with complete horizontal oscillator alignment.

COMPLETE HORIZONTAL OSCILLATOR ALIGNMENT

a) Turn the core of the "ringing" coil (B2) fully out, (counter-clockwise) and short R108.
b) Remove the horizontal discriminator tube (V19) from its socket.
c) Adjust B1 until the picture moves slowly back and forth across the screen with the blanking bar vertically.
d) Replace V19 in its socket.
e) Turn the horizontal centering control until the edge of the picture can be seen. Turn the contrast down and the brightness up until the normally blanked edge of the raster is visible.
f) Adjust the horizontal phasing slug (B3) until the blanking bar is approximately 1/8 inch wide.
g) Remove the short from R108 and readjust the horizontal linearity control as outlined under "HORIZONTAL LINEARITY ADJUSTMENTS".
h) Adjust B2 until 1/8 inch of blanking bar is again visible.

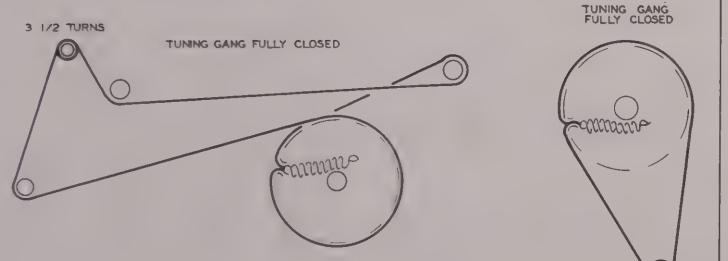
Check the oscillator pull in range as follows:
Turn B1 until the picture falls out of sync.
Slowly turn B1 back towards its original position and carefully note the number of bars present just before the picture falls into sync. Repeat this check for both direction of rotation. If the number of bars present just before synchronization is less than three or more than four at either end of the pull in range, repeat the complete horizontal oscillator alignment. After completing this check perform the slight retouch adjustment above.
Repeat the horizontal oscillator check.

HIGH VOLTAGE OSCILLATOR ADJUSTMENTS

Turn the contrast and brightness control to minimum.
Make sure the high voltage power supply cover is properly in place, and turn the high voltage trimmer (B4) to minimum capacity, (fully out).
Connect the high voltage probe of a VTVM to the high voltage lead from the power supply, connect the common lead to chassis. Turn B4 clockwise and observe the reading on the meter. A peak voltage of approximately 12KV should be reached. Continue turning B4 clockwise until the meter reads 9.5KV. This is the proper setting for B4.

DISASSEMBLY INSTRUCTIONS

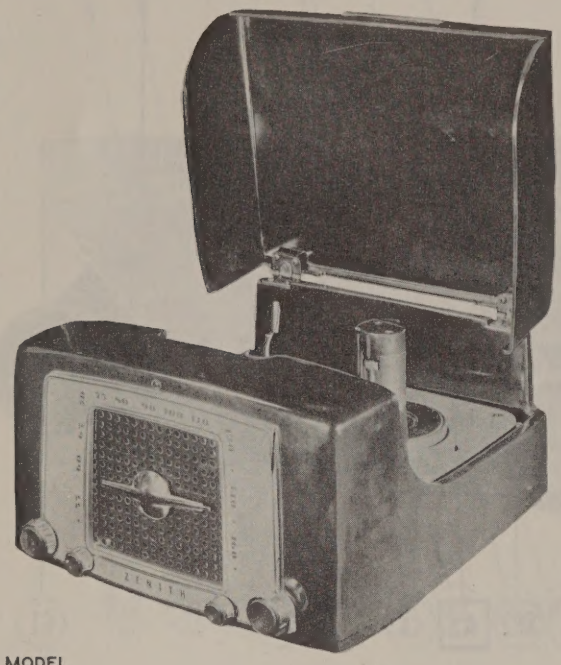
1. Remove eight push-on type control knobs.
2. Remove eight screws holding rear cover. Remove cover.
3. Disconnect phono and audio plugs from chassis.
4. Disconnect built-in TV antenna at screw connections. Disconnect 3 plug-in type antenna leads from connection near speaker.
5. Disconnect speaker plug from chassis.
6. Remove six 5/16" hex head bolts holding chassis and remove chassis.
7. Remove four 3/8" hex nuts holding speaker. Remove speaker.



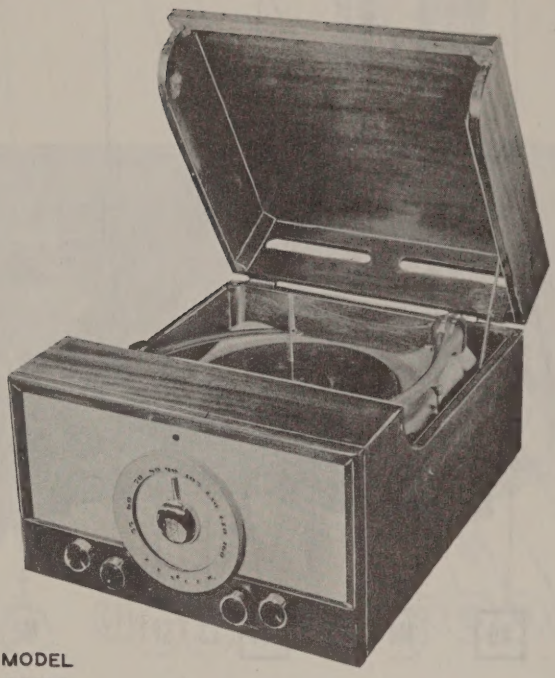
DIAL CORD STRINGING

ZENITH
MODELS G660, G663, G665 (Ch. 6G01)

ZENITH
MODELS G660, G663, G665 (Ch. 6G01)



MODEL G660



MODEL G663R

ZENITH
MODELS G660, G663, G665 (Ch. 6G01)

TRADE NAME	Zenith, Models G660, G663, G665 (Ch. 6G01)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois.
TYPE SET	AC Operated Combination Phono - Radio Superheterodyne Receiver With Loop Antenna.
TUBES (SIX)	Types 12BE6 Converter, 12BA6 IF Amp. - Phono Preamp., 6AQ6 Det.-AVC-AF, 50C5 Power Output, 6C4 Phono Oscillator, 35W4 Rectifier.
POWER SUPPLY	110 - 120 Volts AC — RATING .26 Ampere @ 117 Volts AC
TUNING RANGE—BROADCAST	535 - 1620 KC — RECORD CHANGER --- ZENITH MODEL S-14023

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn the tuning gang fully closed, and set pointer on last reference mark at the low frequency end of the dial.

Use isolation transformer, if available. If not, connect a .1 Mfd. capacitor in series with the low side of the signal generator and B-.

Loop should be maintained in same relative position as when receiver is installed in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5 Mfd.	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001 Mfd. to reduce hum modulation.
2.		Loop	1620KC	"	"	A5,	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for max. output.
3.		Loop	1400KC	Tune for max. signal.	"	A6	"

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp. - Phono Pre-Amp.	12BA6	12BA6	7BK	
V3	Det. - AVC - AF	6AQ6	6AQ6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Phono Oscillator	6C4	6C4	6BG	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	22-2086	AF888D †			EL-340 †	■ Filter
B	40	150		PRS150/20			UT-201	▲ Filter
C	20	150						Decoupling
C2	100		22-5	GP100M	D6-101	GP1K-100	1FM-31	Oscillator Grid Cap.
C3	.05	200	22-829	P288-05			TM-15	AVC Filter
C4	.05	200	22-829	P288-05			72P51	Line Isolation
C5	.0005	600	22-854	GP500M	D6-501	GP2K-500	TR-35	AVC Filter
C6	10000		22-3	BPD-10	D6-103	811-01	36C1	Audio Coupling
C7	10000		22-3	BPD-10	D6-103	811-01	36C1	Audio Coupling
C8	4000		22-4	GP4000M		GP2M-004	TM-24	Tone Compensation
C9	.05	200	22-178	P288-05			TM-15	Tone Compensation
C10	.0005	600	22-854	GP500M	D6-501	GP2K-500	TR-35	Tone compensation
C11	.01	400	22-1182	P488-01	D6-103	811-01	TM-11	Output Plate Bypass
C12	.05	200	22-829	P288-05			TM-15	Phono Osc. Grid Cap.
C13	39		22-2200	GP39M	D6-390	GP1K-39	1FM-44	Phono Coupling
C14	50	500	22-289	1468-00005	D6-500	GP1K-50	1FM-45	Osc. Feedback
C15	10000		22-3	BPD-10	D6-103	811-01	36C1	Tone Compensation
C16	10000		22-3	BPD-10	D6-103	811-01	36C1	Audio Coupling
C17	.001	200	22-1444	P688-001	D6-102	GP2L-001	TM-21	IF Screen Bypass
C18	.047	400	22-1775	P488-047			TM-15	Line Filter

† PARALLEL SECTIONS TO OBTAIN DESIRED CAPACITY.

CONTROLS

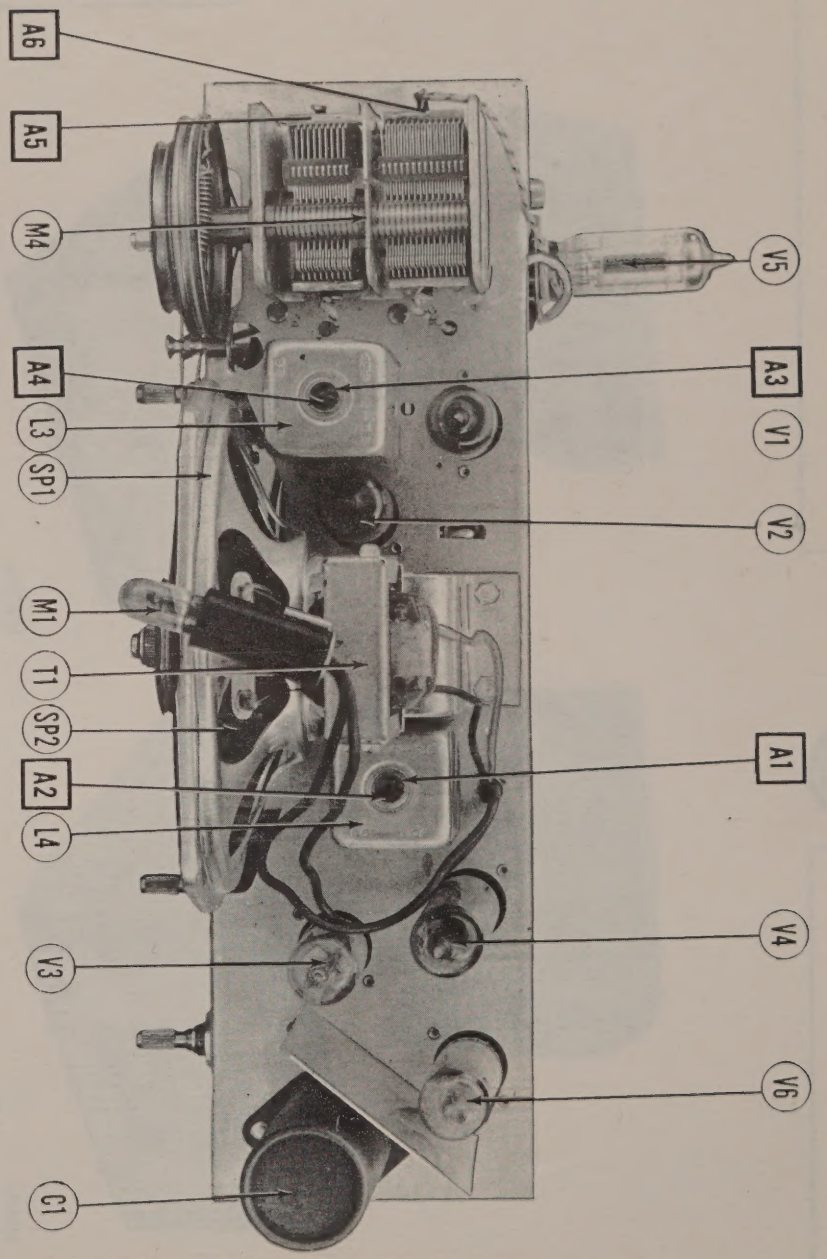
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	63-2046	Q11-137	AM-61-Z	AN-69	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R1A per instructions.
C	Switch		Not Req.	76-1	SW-A	K-155	Attach to R1A per instructions.
R2	500KΩ	½	63-2045				Tone Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R3	10KΩ	½	63-1828	BTS-10K	Oscillator Grid
R4	15 Meg.	½	63-1961	BTS-15 Meg.	AVC Network
R5	2.2 Meg.	½	63-1926	BTS-2.2 Meg.	AVC Network
R6	68KΩ	½	63-1863	BTS-68K	IF Screen
R7	10KΩ	½	63-1828	BTS-10K	Decoupling
R8	2.2 Meg.	½	63-1926	BTS-2.2 Meg.	AVC Network
R9	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	AF Amp. Grid
R10	470KΩ	½	63-1898	BTS-470K	AF Amp. Plate
R11	820Ω	½	63-1782	BTS-820	Tone Compensation
R12	470KΩ	½	63-1898	BTS-470K	Output Grid
R13	150Ω	1	63-1977	BW-1-150	Output Cathode
R14	4700Ω	½	63-1814	BTS-4700	Tone Compensation
R15	1.5Meg. 5%	½		BTS-1.5Meg-5%	Phono Oscillator Grid - See note 1
R16	15KΩ	½		BTS-15K	Phono Oscillator Plate - See note 2
R17	47KΩ	½	63-1856	BTS-47K	Tone Compensation
R18	1000Ω	1	63-1574	BW-1-1000	Filter
R19	22Ω	½	63-1219		Surge Limiter - Wire Wound

Note 1: Some models use 1 Meg. resistor in this application.
Note 2: Some models use 22KΩ resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.5KΩ	3.5Ω	180Ω	.6Ω	206-669	A-3876 *	A-2928 *	RO-2 *	*Bend mounting tabs down, file out slots and remount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V. C. IMP.	49-669			
	PM	3.5Ω				
	CONE DIA.	V.C. DIA.				
SP2	5"	9/16"				

R F COILS

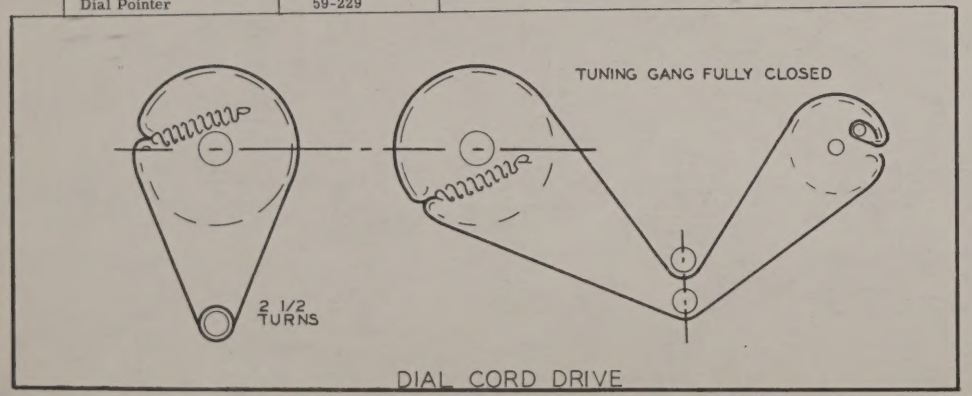
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
L1	Loop Ant.	1.5Ω		S-15896-360		
L2	Osc. Coil	6.2Ω	.8Ω	S-13799	14-1060	
L3	1st IF Trans.	19Ω	19Ω	95-1101	16-1666	
L4	2nd IF Trans.	19Ω	19Ω	95-1102	16-6667	
L5	Phono Osc.Coil	2Ω		S-12603		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ZENITH PART No.		
M1	Bayonet	6 - 8	.15	Brown	100-67		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Phono Cartridge	S-15222	
M3	Switch	85-465	Radio - Phono
M4	2 Gang Variable Cap.	22-2085	(20 - 494 MMF, 28 - 255 MMF)
	Dial Scale	26-424	
	Knob	46-811	Tuning, Volume
	Knob	46-812	Tuning
	Knob	46-816	Radio - Phono
	Dial Pointer	59-229	

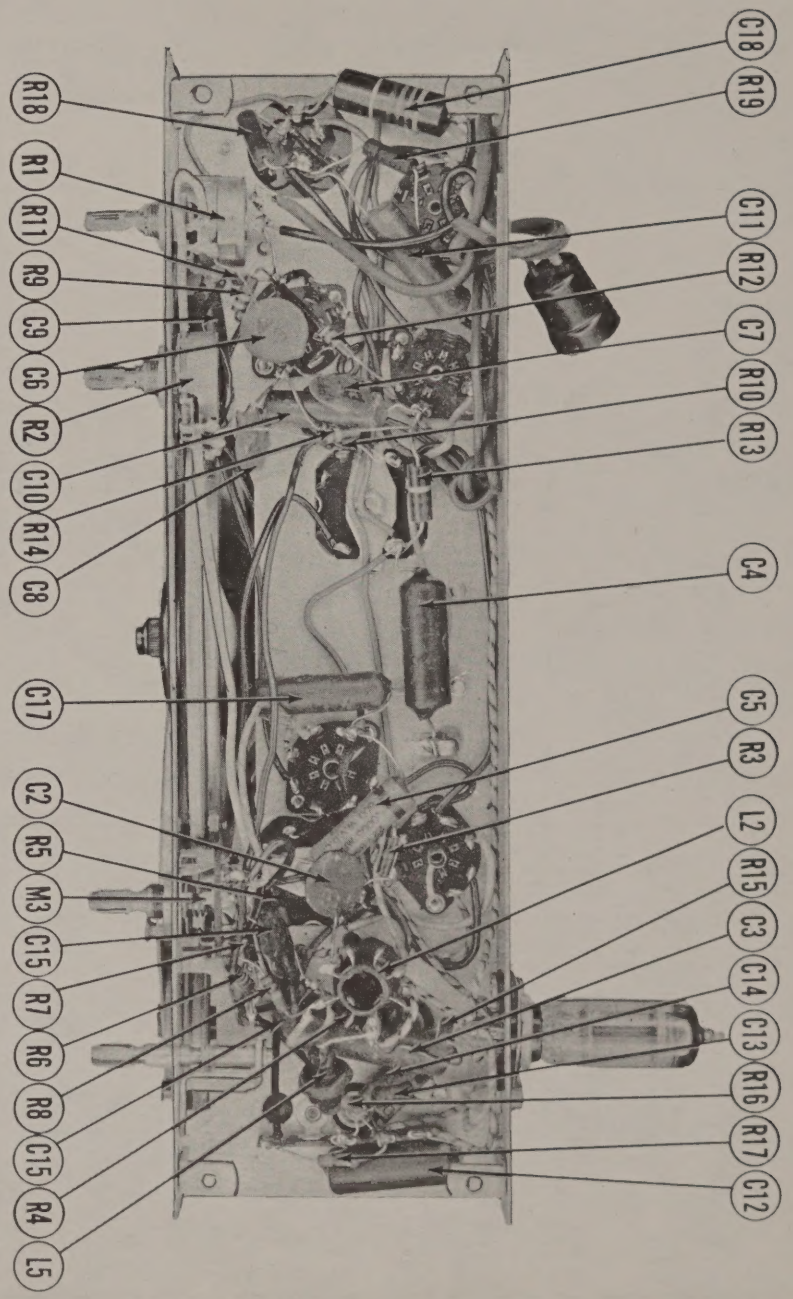


DIAL CORD DRIVE

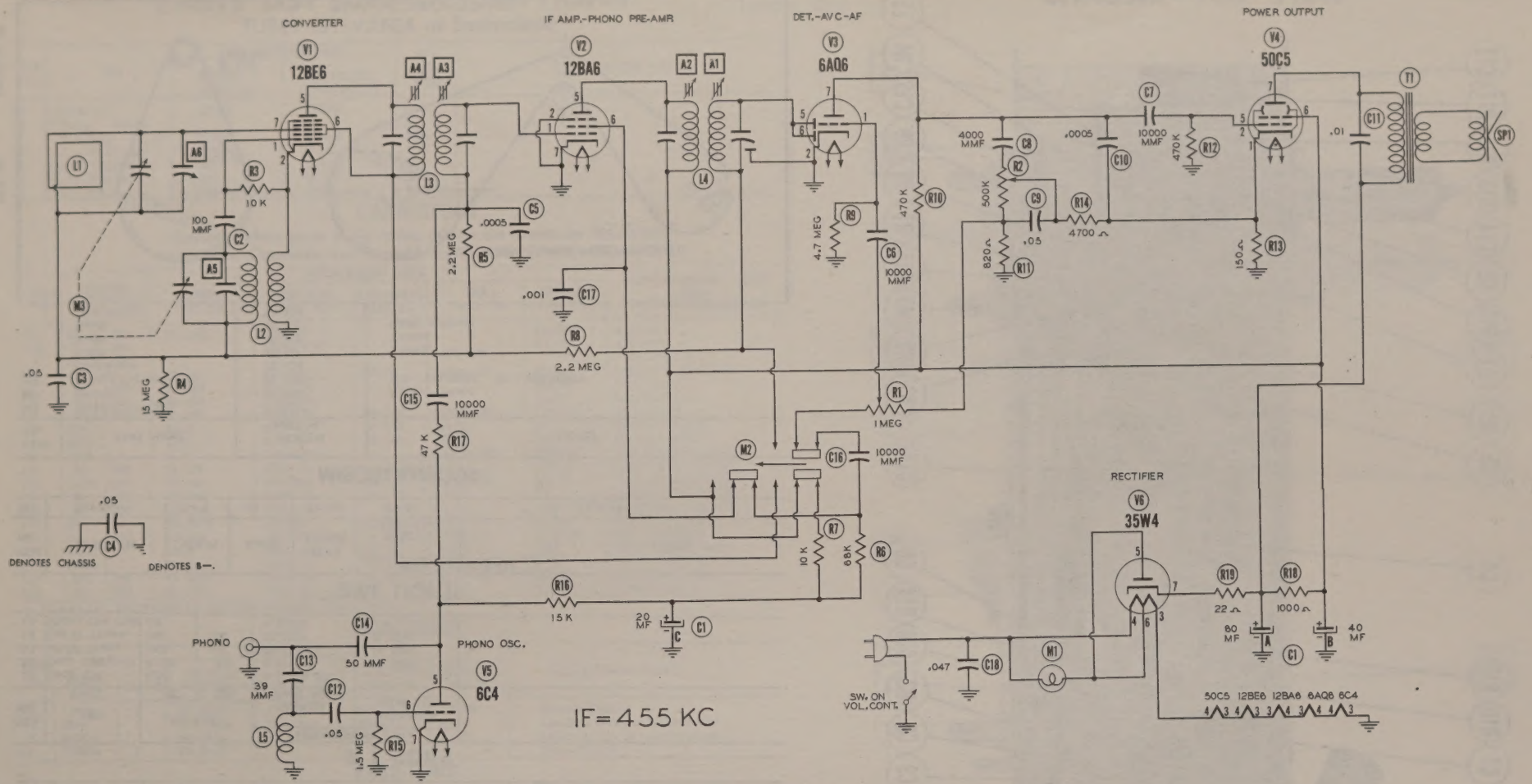
SET 96 FOLDER 12

ZENITH MODEL G660

CHASSIS—BOTTOM VIEW



ZENITH MODEL G660



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§▲.3VDC	0V.	25VAC	37.5VAC	92VDC	92VDC	-.2VDC
V 2	12BA6	-.6VDC	0V.	25VAC	12.5VAC	92VDC	92VDC	0V.
V 3	6AQ6	-.8VDC	0V.	12.5VDC	6.7VAC	-.7VDC	-.7VDC	33VDC
V 4	50C5	6VDC	0V.	37.5VAC	87VAC	0V.	92VDC	113VDC
V 5	6C4	▲50VDC	▲0V.	0V.	6.7VAC	▲50VDC	▲-.4VDC	▲0V.
V 6	35W4	0V.	0V.	87VAC	117VAC	112VAC	112VAC	125VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER. ▲ RADIO - PHONO SWITCH IN "PHONO" POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	10KΩ	.8Ω	25Ω	36Ω	†1000Ω	†1000Ω	2.7 Meg.
V 2	12BA6	4.5 Meg.	0Ω	25Ω	14Ω	†1000Ω	†1000Ω	0Ω
V 3	6AQ6	4.7 Meg.	0Ω	14Ω	8Ω	1 Meg.	1 Meg.	†470KΩ
V 4	50C5	145Ω	470KΩ	36Ω.	85Ω	470KΩ	†1000Ω	†200Ω
V 5	6C4	†▲26KΩ	▲0Ω	0Ω	8Ω	†▲26KΩ	▲1.5 Meg.	▲0Ω
V 6	35W4	Inf.	Inf.	85Ω	122Ω	113Ω	113Ω	7.5KΩ

† MEASURED FROM PIN 7 OF V6.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1950

96-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.